THE MOTOR AGE

THE AUTOMOBILE AUTHORITY OF AMERICA

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LEADING CONTENTS

PAGE

The Automobile Show Season—The various exhibitions of motor vehicles before spring . 325

The Chicago Motor Vehicle Co.—An illustrated description of their tests and mechanism 327

Use Kerosene as Fuel—An account of its use instead of gasolene in a steam vehicle . . 336

The Construction of a Motor Vehicle—The fifth of a series of articles for constructors . 338

One Variable Speed Gear—An illustrated description of a friction clutch transmission . 346

Acetylene in Explosion Engines—A discussion of its advantages and grave drawbacks . 348

A Harrowing Experience—Troubles of Philadelphians over ferry regulations . . . 351

A Winton Rumor Denied—The firm will not make steam vehicles—other Cleveland news . 353

Echoes of the Auto Club Election—With other news from New York; forty miles in an hour 355

News of the Motor Industry—Weekly record of progress among the manufacturers . . 356

THE AUTOMOBILE SHOW SEASON

THE OPENING OF THE MADISON SQUARE GARDEN SHOW INAUGURATES THE SEASON—COMING SHOWS—THE BIG CHICAGO TRADE EXHIBITION—MR. EDDY PURPOSES PROMOTING A SHOW

On Saturday of the present week the first of a series of automobile shows will be opened at Madison Square Garden, in New York. After a brief interval will occur the second New York show at the Grand Central Palace, beginning November 17. Following this will come the exhibit at Washington, beginning December 10.

An exhibition is being projected for Boston later on, and in the spring comes the big Chicago trade exhibition and the Pan-American exhibition at Buffalo, the managers of which are making diligent efforts to obtain a large representation from the automobile manufacturers.

In addition to these shows, there have been a number of others projected—so many, in fact, that not a few of the manufacturers have begun to see, in the show problem, a serious question, inasmuch as attendance at all of the numer-

ous shows would mean an immense outlay.

Advantages and Disadvantages

The advantages of a limited number of trade shows, in any prosperous industry, is too well understood to offer a subject for debate. The big bicycle shows, the carriage shows, and the exhibitions in many other industries, have been acknowledged by the trades represented to be of infinite benefit in getting tradesmen together, in providing a place where agents could gather and inspect the products of the various exhibitors side by side, and in giving the industry widespread advertising. They have been great educational institutions. They were of particularly great value in the bicycle business, which ten years ago, in many of its commercial features, was very much in the same condition as the automobile business is to-day.

Danger of Too Many Shows

Despite the advantages of shows, there is a possibility of overdoing the show business, even in its early days. There are no end of promoters who, like those who recently operated in Chicago under the borrowed name of the Chicago Inter Ocean—to the sorrow of that publication—have no object beyond that of "sandbagging" manufacturers into exhibiting and "milking" them to the fullest extent after they have been secured as exhibitors. Shows run by such promoters may or may not be beneficial to the trade. From reputable managers, such as are promoting the aforementioned shows, and the ones who have the Chicago exhibition in hand, no danger need be apprehended.

The Madison Square Exhibition

The exhibition at the Madison Square Garden, under the auspices of the Automobile club of America, and under the active management of the Madison Square Garden Co., with Frank W. Sanger at its head, has an exhibition hall with a world-wide reputation and one which seldom fails to attract a big crowd, no matter what the attraction. The management are veterans in the promotion of exhibitions and never fail to bring the highest grade of executive ability to bear. They know the value of good press work, and always have it. The fact that the Automobile Club of America has lent its name to the exhibition is a further guarantee of its being carried out on the right lines. All the space in the main exhibition hall was taken long ago, and exhibits will be installed in the galleries and in the large restaurant room of the building, and still there are manufacturers who have been unable to obtain space.

The Palace Exhibition

The Grand Central Palace has considerable more available space than Madison Square Garden, and with the opening of the Palace show yet more than three weeks off, Manager Marcus Nathan has disposed of more space than the total available area at the Garden, and still has room for more exhibitors. A number of the Garden exhibitors will transfer their exhibits to the Palace, and a considerable number who will not be seen at the Garden have booked space at the Palace. The exhibition at the Garden will come just at election time, and that the excitement will detract somewhat from the show there is not doubt. The Palace show will occur long enough after election for the excitement to have died out, and this show is further fortunate in being scheduled for the same dates as the popular horse show, which will bring a host of fashionables to New York.

The Washington Show

The show at the National capital will take place during the week of December 10, under the management of Edward Reynolds. It can scarcely assume the same importance as the shows at New York and Chicago as a trade exhibition. Washington, however, with its wealthy population and its scores of miles of asphalt, is of all cities in the United States the one best adapted to the pleasurable use of automobiles, which are already exceedingly numerous there. The prospect for immediate and future sales to individuals in that city is excellent, and exhibitors should be well repaid for the expense of the exhibit.

The Chicago Trade Exhibition

The next important exhibition scheduled is that under the management of

The Motor Age, at Chicago, March 23 to 30. This show will have a decided advantage over any of the others in several respects. One of the chief advantages is that of an exhibition hall which has no equal in America. It is larger, by a very considerable percent, than the famous Madison Square Garden, and is in every respect a superior building for exhibitions of this nature, and is the most perfectly lighted building of its kind that has ever been constructed. Although it is comparatively new, it has had hardly an open day or night.

Experienced Management

The exhibition is under the management of The Motor Age. It was originally projected for this fall, but, on consultation with a number of manufacturers before definitely deciding on the dates, it was found that some time in the latter part of March, just at the beginning of the buying season, would meet the approval of the greatest number. The management has the past record of giving all the successful Chicago bicycle shows during the great prosperity of the bicycle business and of being identified with none of the unsatisfactory ones.

Getting Agents to Attend

The managers know full well the value of good advertising and good press work, and, above all, the value of getting the trade from all parts of the country, particularly from Buffalo and all points from there south to the Gulf of Mexico, and west to the Pacific ocean, to attend. With their trade newspaper connections they are in a far better position to know and to secure the attendance of the trade than any one without such connection. No exhibition under their management has never failed of attracting a local crowd that taxed the capacity of the building in which it was held. It has even been so great on occasions that it was necessary to close the doors to prevent dangerous crowding of the building.

Two Great Annual Exhibitions

If the experience of the bicycle trade be any criterion, then the future history of automobile shows will be that there will be one big show in New York and one in Chicago each year, at such dates as the future and varying conditions of the industry shall indicate as being the most advantageous. As gatherings of the fashionables these two shows are bound to reach the plane that has been established by the horse shows in these two cities. As occasions where the agents from all the territory tributary to the two cities will gather to complete arrangements for the coming year with the exhibiting manufacturers, they will reach and surpass the bicycle shows.

Other Local Shows

Because logic points to the holding of two great annual exhibitions in the two great cities, it does not follow that they may not, and probably will, be other shows, but they are bound to be local in character. What the big shows will be to the manufacturers, the local shows will be to the local retailers. It will probably be to the advantage of the manufacturer to assist his local representative in making a creditable exhibit at a local show and to share the expense of such an exhibit with him. But this is a matter that will be governed by conditions at the time. The two big shows at New York and Chicago will be the ones in which the manufacturer is vitally interested and which he will find to his advantage to patronize, regardless of what he does about those of local character.

Mr. Eddy's Proposed Meet

Arthur J. Eddy, the urbane and polished president of the Chicago Automobile Club, attorney at law and successful corporation promoter, is one of the most ardent chauffeurs in the country. He is also enthusiastic over automobile racing, as was testified by his entering all the races at the Chicago Inter Ocean tournament to which he was eligible. He believes that automobile shows will be of benefit to the sport of automobilism and he believes that automobile racing will benefit the industry. In his official capacity as president of the Chicago Automobile Club he sent to the various automobile publications of the country a circular letter, stating the plans of the club. To gain a more detailed idea of Mr. Eddy's intentions, he

was interviewed by a representative of The Motor Age.

Mr. Eddy Interviewed

"I—and my club—believe," he said in answer to a question, after greeting the newspaper man cordially, "that automobile exhibitions can best be given under the management of the automobile clubs, who have responsible and representative men at their heads. I believe that automobile racing and the automobile industry must go hand in hand. I believe—and my club agrees with me—that an exhibition under its auspices will be better managed and will do more to encourage automobile racing and the industry, than any exhibition that can be given under the management of any person interested in the industry. I am not interested financially in the industry, and my club, as a club, is not. We have no desire to make money and do not know what to do with the dues we have already collected.

Mr. Eddy Thinks Racing Vital

"Racing is one of the vital features of the automobile industry in my estimation—and my club also thinks so. An exhibition in March would preclude the possibility of racing in connection with it, and that would rob it of its most attractive feature. However, the entire matter of giving an exhibition and race meet, we have wisely decided to leave open until we hear more definitely from the manufacturers. I shall attend the New York Exhibition—leaving Chicago immediately after election—and I shall see the manufacturers, and if they offer sufficient encouragement, we will go ahead with the preparations for our race meet and exhibition. We will arrange it so that one admission fee will admit to the exhibition down town and to the race meet which will be given at Washington Park.

Exhibitors Must Guarantee Expenses

"Of course my club is not in a position," said Mr. Eddy, answering a question, "to undertake the promotion of this exhibition, if there be any doubt of its financial success. My plan is, if I receive the proper encouragement when I see the exhibitors at New York, to prepare contracts for the signatures of the manufacturers, and to submit these contracts to them. It will be necessary, of course, for them to pay a substantial percentage of their rental fees soon after signing their contracts. In that manner I will be able to ascertain whether or not the exhibition will be self-sustaining. In case it does not promise to be a paying venture, all that will be necessary for us to do will be to return to the manufacturers their contracts and their advance payments, and to abandon the race meet and exhibition.

The Division of Profits

"As I said," continued Mr. Eddy, "my club has no need for money, and it has been a mooted question as to what we should do with the profits, if we decide to run the tournament. It was proposed to divide the profits, pro rata, among the exhibitors, after the tournament should be over. One manufacturer, however, protested that if the club should give a successful meet, that it would be entitled to retain all the profits. I have come to no conclusion on this point, and I shall wait until I have ascertained the sentiment of the exhibitors whom I see at the New York Show. I am confident, however, that if the Automobile Club of America can give a show in New York, that my club can do the same in Chicago."

Will Need a Manager

In answer to a question concerning the management, Mr. Eddy said, "Of course neither I nor any representative member of my club will have time to devote to the management of such an exhibition. We would be obliged to engage some competent person to look after the details. We should endeavor to secure good treatment by the local newspapers, and we are sure that the trade papers will accord us the greatest courtesies. I feel confident that I shall be able to secure the support of the manufacturers, and I feel safe in saying that under the plan of my club—a combined exhibition and race meet—the affair will have such a success as it could have in no other manner. I am sure I am right."

THE CHICAGO MOTOR VEHICLE CO.

DESCRIPTION OF THE FRICTION TRANSMISSION AND OTHER CLEVER FEATURES IN THE VEHICLES OF THIS CHICAGO FIRM—WONDERFUL CONTROL OBTAINED BY THEIR METHOD OF TRANSMISSION

From the first, the question of variable speed and power transmission has been one of the chief stumbling blocks in the path of progress of automobile constructors. It has been particularly annoying to those who have pinned their faith to the hydrocarbon engine for motive power, although the manufacturers of steam and electric vehicles are beginning to come to an understanding of the fact that their vehicles can be much improved by the introduction of speed changing gears.

Gasolene Motors at Varying Speeds

A number of gasolene motors have been produced which have shown great flexibility, as far as the regulation of the speed of the motors themselves is concerned, and yet it is an undisputed fact that this most economical type of motor has but one speed at which it can develop its greatest horsepower, and that any reduction from this speed can be made only at the expense of power. And this reduction of speed, with its consequent loss of power, usually comes in automobile use, just at a time when the full power is needed, and the motor is found wanting unless it be provided with change speed gears, or has a horsepower far in excess of what is commonly needed. However, this subject has been so clearly treated in the recent articles in The Motor Age, "About Motor Speed and Change Gears" (issues of October 18 and 25, 1900), that any further discussion at this time would be a work of supererogation. The reader is referred to those articles.

The foregoing remarks were inspired by a recent visit, by the writer, to the factory of the Chicago Motor Vehicle Co., at Harvey, Ill., about twenty-five miles south of Chicago, and by the scenes he witnessed while there.

About the Chicago Company

This company was formed about two years ago under the laws of the State of Michigan, to perfect and market motor vehicles, under the numerous patents of William O. Worth, who has been engaged in automobile construction for more than six years past. The company has recently been reincorporated by Mr. Worth and his associates under the laws of the State of Illinois, for $1,000,000. The officers are: William O. Worth, president; W. R. Donaldson, secretary; W. H. Kellogg, treasurer; and J. E. Keith, general manager. Most of the stockholders are Chicago capitalists.

Concerning Power Transmission

The initial remarks about variable transmission were caused by the fact that the transmission used by the Chicago Motor Vehicle Co. is the most noticeable feature of its vehicles, which depart radically, in many particulars, from the construction adopted by other manufacturers of gasolene vehicles. They use friction transmission.

Now, friction transmission has long been looked upon, in the mechanical world, as an impractical and wasteful method of conveying power—except in the universally used form of belt transmission. Chain transmission was looked upon in the same manner a few years ago. Neither friction nor chain transmission was used to any extent, except in certain forms of special machinery, in which the necessary mechanical movements could not be so well produced in any other way. There was, accordingly, a natural and general prejudice against both friction and chain transmission. This prejudice has been wiped out, as far as it extended to chain transmission, by the bicycle. There the chain was a necessity. Chains and chain transmission were improved until there are bicycles today, equipped with chains so perfect that the difference in efficiency between them and bicycles equipped with gear wheels, is in favor of the chain-equipped

bicycles. And these bicycles show little difference in the efficiency of their transmission gearing in good or bad weather, rain or sunshine, on mud or asphalt roads. The prejudice against chain transmission has been wiped out because improvements have shown it to be right.

Friction Transmission Also Right

A similar wiping out of the prejudice against friction transmission will be the result of the general use of the automobile, if the results accomplished by Mr. Worth and his company be any criterion—and The Motor Age believes that they are.

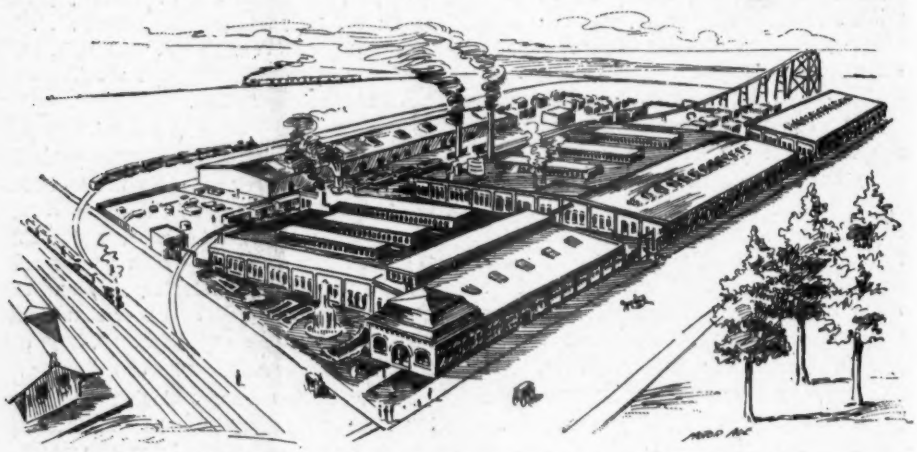
Thousands of people at the late automobile exhibition and tournament at Chicago, were treated to the novel sight of one of the company's vehicles balancing on a teeter board, stopping, stock still, with one of the wheels hanging over the edge of a big cube of wood, then being lowered to a point where it would barely crack the shell of an egg placed in its road and climbing back over the block, going up a forty percent grade and performing numerous other feats that would have been set down as absolutely impossible for an automobile to accomplish, unless they had been actually seen.

Not a Trick Machine

Some people went away with the idea that these feats were performed by a "trick" vehicle, built for no other purpose than to amuse the throng—and, perhaps, sell stock. On the contrary, the vehicle was one of the Chicago company's regular machines—and there is no stock for sale. It is unfortunate, perhaps, that the exhibitions of the company's vehicles at the tournament were confined to the more difficult feats and were not frequently shown on the track, traveling at a good rate of speed, for it seemed that a vehicle that could climb a forty percent grade could scarcely be capable of much speed. But such is not the case.

The Vehicle Possesses Speed

During the writer's visit to the Harvey factory, he, with four other passengers, was taken for a ride in a nine-passenger brake, fitted on a running gear identical with the one used at the Chicago tournament. During the course of the ride, an impromptu race with an electric car was gotten on. It continued for about three-quarters of a mile. The brake had a start of a few yards and gradually increased it, despite the evident efforts of the motorman, and at the end was several hundred yards to the good. The speed was in excess of twenty-five miles an hour, according to the best of the writer's judgment. The conditions were favorable for both contestants.



PLANT OF THE CHICAGO MOTOR VEHICLE CO. AT HARVEY, ILL.

Shows Wonderful Control

During the course of the ride, the vehicle was shown to be capable of being started promptly and of being put to full speed in short order, of being stopped so quickly that the passengers were obliged to hold to the seats in order to

prevent being thrown out, of traveling at a snail's pace and at any pace from that up to twenty-five miles an hour—in short, it showed itself to be perfectly docile to every desire of the operator.

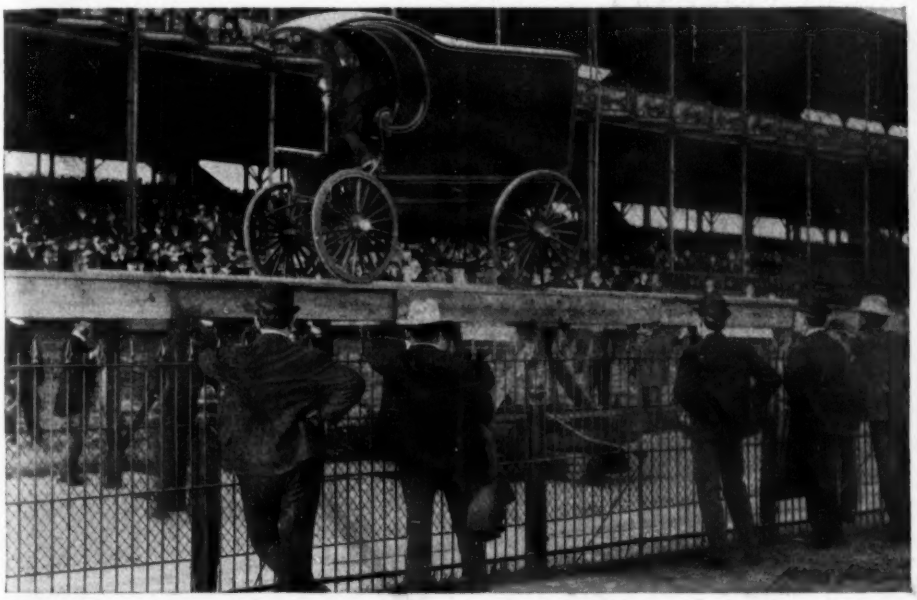
Put to Severe Tests

Later on, a similar vehicle, sans body, was operated by Arthur Gardiner, the ex-bicycle champion, over railroad tracks and across a field traversed by ditches, high with grass and generally unfit for the use of any vehicle. One of the most impressive tests to which it was there put was that of running with the wheels on one side of the vehicle in a ditch about two feet deep. It seemed impossible that any vehicle could extricate itself from such a position but this one did—only, however, after a rope had been tied around the tires to give it better traction. Another feat was that of climbing, over a pile of loose timbers, some two feet high, forward and backward.

The description of these various feats gives but a slight idea what can be done with the vehicle, but are certainly enough to show that it is a machine which is capable of doing everything that a vehicle in actual service would ever be called upon to do. A description of the mechanism is now in order, and a few words about the plant where it is being manufactured. The latter subject will be briefly treated, first.

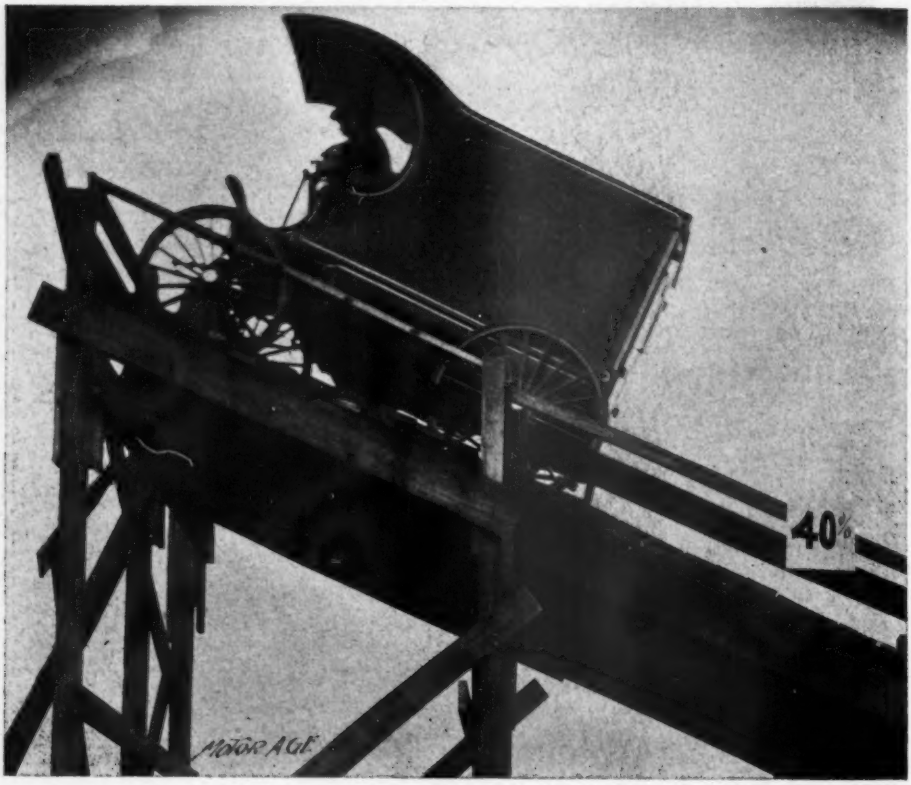
Description of the Factory

The company purchased, some time ago, the extensive factory which was utilized, until recently, in the manufacture of the Harvester King agricultural implements. This plant comprises eight acres of land, well covered with buildings having a floor space of five acres, as shown in the illustration. These buildings are all one story in height and are admirably lighted. They are located on the Illinois Central Railroad directly opposite the station and are not far from the Grand Trunk Railroad. The plant is equipped with four boilers of 100 horsepower each and engines to match. It has its own electric lighting plant, automatic sprinklers and other fire extinguishing apparatus. In addition to the machine shops and wood working shops, there is a foundry and a forge shop. Every part of the vehicle will be made in the company's own plant with the exception of the rubber tires. Mr. Worth is authority for the statement that this course has been adopted in order that



CRACKING AN EGG ON A TEETER BOARD.

the work may all be done under the supervision of the company's own experts who will see that it is all well done. It is only a short time since the company has obtained entire possession of the plant and it is not, therefore, entirely equipped with machinery. This, however, is being rapidly installed, and when it is all in, the factory will have a capacity of fifteen machines per day. Even at that, the company already has enough orders on its books to keep it busy for some time to come.



ON A FORTY PERCENT GRADE.

Interchangeable Bodies

One feature of their vehicles, on which the company make strong claims, is that there are only five sizes of running gears —equipped with motors of five different powers—and that any one of these five styles of running gears can be fitted with no less than forty different styles of bodies. The bodies are entirely separate and distinct from all the rest of the vehicles and one body can be removed and another substituted within a very few minutes and at the expense of a very small amount of labor. This is one of the patented features. The stiffness of the frame permits the use of very light bodies. The writer was requested to lift one end of the body of a nine-passenger brake. Although he is no weakling, he braced himself for a test of his muscles. To his surprise he found that he could readily raise one end of the body with one hand and could have lifted the weight of the entire body, without undue exertion, had it been compassed in convenient shape.

This arrangement permits the tradesman to become possessed of a vehicle which can be utilized as a delivery wagon during business hours and which can be converted into a stylish pleasure vehicle at other times. It also permits the use of a two-passenger body or a nine-

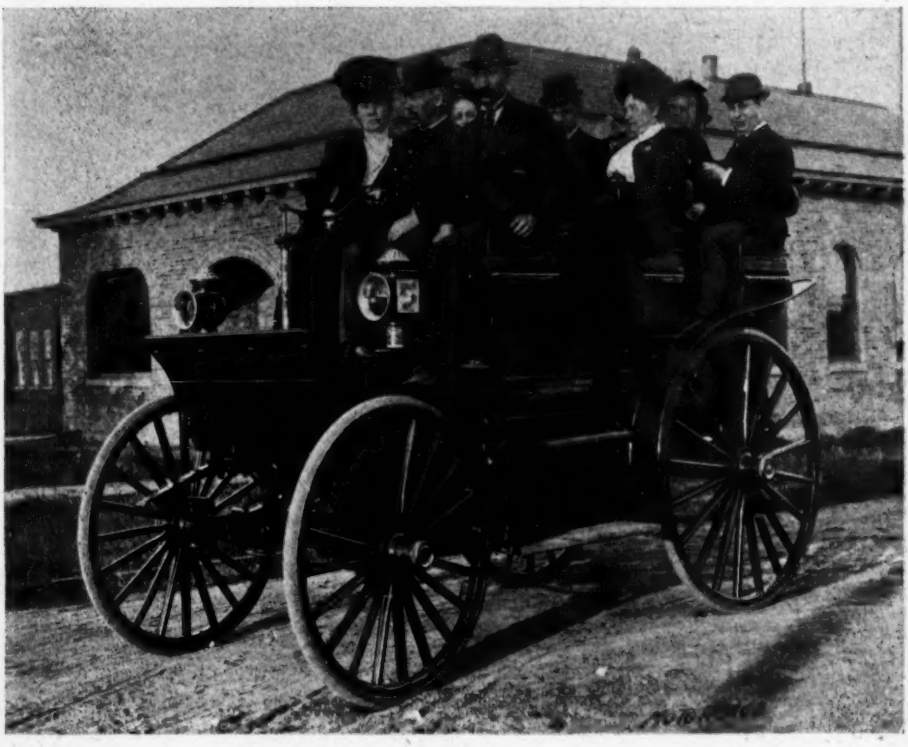
passenger body on the same running gear. As a livery rig, it could be used with any number of styles of bodies.

Novel Frame Construction

The frame of the running gear—the stiffness of which permits the use of light bodies—is made of steel tubing of rectangular section. According to Mr. Worth, this frame, when supported at the two diagonally opposite corners and weighted with 4,000 pounds at each of the other two corners, showed a deflection of less than half an inch. The frame itself is surprisingly light. It has few joints and what it has are screwed and brazed together. Its general construction can readily be seen by reference to the illustration. The frame carries the entire motor and most of the transmission mechanism. Springs are interposed between the frame and the axles. The mechanism is, therefore, protected from shocks and vibration.

The wheels are 52 inches in diameter and are most substantially made, with steel hubs in one piece. These hubs have broad spoke-supporting flanges, which are connected by transverse supports between each two spokes. Solid rubber tires of large section are used, set in channel steel rims. The rear axle is fitted with roller bearings and the front wheels with ball bearings.

Although the frictional transmission is capable of giving any speed, forward or back, it is not depended upon entirely for regulating the vehicle. The engine is flexible, too.



CHICAGO MOTOR VEHICLE CO.'S BRAKE IN FRONT OF THE FACTORY OFFICES.

Description of the Motor

This engine is a gasolene motor with two horizontal, opposed cylinders, balanced and disposed longitudinally of the vehicle, well forward and to the right of the center. The cylinders are water cooled, with the exceptions of the heads. The water jackets are of rectangular section, giving a large space for the circulation of the water which is circulated by what is known as the "natural" or thermal system.

Normally only one cylinder (the rear one) is working, but when the load on the engine reduces its speed, a governor permits the hydrocarbon mixture to be drawn into the forward cylinder, which has previously been drawing in only pure air, when the explosions in the two cylinders occur alternately. This continues until the speed of the engin has reached a certain fixed maximum, when the hydrocarbon mixture is cut off from the forward cylinder and the rear one again assumes the burden of the load. Thus the amount of work which the engine is required to do, determines whether one or both cylinders shall be in operation. There are two mufflers. A portion of the frame tubing is utilized to carry the exhaust to these mufflers.

CLIMBING OVER LOOSE TIMBERS.

Engine Adapts Itself to Load

The exhaust valves are operated through the medium of a spirally cut gear wheel on the crank shaft of the engine. This gear wheel meshes with a pinion at the center of a shaft at the top of, and parallel to the cylinders. On the ends of this shaft are two cams which actuate the two exhaust valves. The engine governor regulates the amount of explosive mixture which is admitted to the cylinders—and through this the speed of the engine—as well as entirely cutting off the forward cylinder's supply except when the speed of the engine becomes too slow. The governor can be set for any one of six different engine speeds, by means of a small lever which is convenient to the operator's hand. The engine is also provided with a device for scavenging the cylinders of the products of combustion to give an entirely fresh charge of the hydrocarbon mixture for each working stroke of each cylinder. There is an automatic oiler which insures the lubrication of the working parts.

The richness of the hydrocarbon vapor which is fed to the cylinders is regulated in a mixer in which the proportion of

gasolene and air is governed by the amount of the oil which is admitted. A needle valve is provided in connection with which there is a graduated scale, showing the amount of opening given to this valve. The gasolene tank, it is stated, carries a supply of fuel sufficient for 300 miles.

Other Features of the Motor

The ignition is, of course, electric. To start the motor, a small storage battery is used, after which a magneto is utilized, in which a small friction wheel, actuated by the face of the flywheel of the motor itself supplies the power. After the engine has been started, the storage battery is switched out. The initial starting of the motor is done with the aid of a crank, in the usual manner.

The cooling water tank is carried on the rear portion of the frame. It is of ample capacity, and is provided with air tubes running from the bottom to the top, at an angle of about sixty degrees, the lower ends inclined towards the front of the vehicle so as to catch the air, which, rushing through the tubes, assists in cooling the water. The water, it is stated, never reaches the boiling point and the supply is sufficient for more than one day of the hardest kind of work without renewing.

The Transmission Mechanism

The engine, as before stated, is located well forward in the vehicle, and to the right of the center. The flywheel, on the inner end of the crankshaft, is thus located in a vertical plane, through which passes the longitudinal center of the vehicle. This flywheel actuates the magneto generator for the ignition, as already described, and, in addition, is one of the parts of the friction transmission mechanism. The side opposite to the engine is perfectly flat and is faced with heavy rawhide. Parallel to this flat side and at a suitable distance from it, is a shaft, a little longer than the diameter of the flywheel. This shaft carries a steel friction wheel which can be brought into contact with the leather covered face of the flywheel. The longitudinal shaft is provided with a groove the entire length of the shaft. The friction wheel is slidably mounted on this shaft and a feather on its hub fits snugly in the groove in the shaft. Thus, any rotation of the friction wheel, imparts rotation to the shaft but the wheel may, at the same time, be slid back and forth on the shaft.

How It is Operated

The shaft is carried in brackets which are provided with eccentric bearings. When the vehicle is at rest the face of the steel friction wheel is at a short distance from the leather covered face of the flywheel. A slight pressure of the operator's foot on a pedal turns the eccentric bearings of the shaft and throws it, together with the friction wheel mounted upon it, to the right, and the face of the steel friction wheel comes into contact with the leather covered face of the flywheel. The motion of the flywheel is thus communicated to the steel friction wheel, and by it to the shaft on which it is mounted. This shaft drives the vehicle, in a manner that will be explained a little later on. It takes but a comparatively light pressure on the pedal to produce positive transmission of the motion of the engine to the vehicle.

How Speed is Varied

It will be remembered that the steel friction wheel is slidable on the shaft upon which it is mounted. Attached to the hub of the steel friction wheel is a long rack, extending in a forward direction. This rack engages with a pinion at the base of the controlling and steering lever. Raising or lowering the handle of this lever shifts the steel friction wheel over the entire diameter of the flywheel, giving the vehicle a forward or backward speed of any degree.

A Lever of Many Functions

This lever also controls the steering of the vehicle in the usual manner. There is a unique device for allowing for the compensation of the action of the vehicle springs, without interfering with the steering. By shifting the steel friction wheel to the center of the flywheel the vehicle is provided with an efficient brake. It will be seen that the vehicle is thus steered, driven at any degree of speed, either backward or forward, and is braked by a single lever—and the accuracy with which this lever governs these various functions is nothing short of marvelous.

It will be remembered that the engine

can also be set for any one of six different speeds. This regulation of the speed of the engine requires but a small fraction of a minute. Thus it will be seen that the vehicle is instantly adaptable to all conditions of roads, load and speed. The engine can be run at a practically constant speed, through the various degrees of vehicle speed or load, and the full horsepower of the engine is, therefore, always available, a statement which could not truthfully be made concerning a great many of the vehicles now on the market.

Power to the Wheels

The grooved transmission shaft is connected by a universal joint to a diagonally disposed shaft, which in turn is connected by a second universal joint to a shaft carrying a bevel pinion which meshes with a bevel gear, and, through the medium of the usual differential gear, drives the rear axle.

Attention to Details

The company are giving the most careful attention to the mechanical details of their construction. All nuts and bolts are case hardened, so that there may be no battered heads and stripped threads, and split pins are provided wherever there is the least possibility of a nut working loose, to prevent any possible annoying loss and delay on this score.

It is not the practice of The Motor Age to make sweeping statements concerning the excellencies of any make of vehicle. Whenever such statements are made, as in the present case, it is only after careful investigation and thorough conviction.

USE KEROSENE FOR FUEL

Philadelphia, Oct. 29.—Dr. G. Middleton, of this city, who, with James Mason, the inventor, has been experimenting with kerosene as fuel for steam automobiles, was visited by The Motor Age representative, on Saturday last. In response to a query as to the cause of the delay in making the attempt on the Philadelphia-New York "auto" record, which was announced to take place during the past week, the doctor said it was a case of bad roads.

Waiting for Good Roads

"You can hardly blame us," he said, "for waiting until the conditions are all favorable. We have been ready for a fortnight, but the best stretches between Bristol and Trenton, and between Princeton and New Brunswick, which are none too good even at their best, would, in such weather as we have been having, render absolutely impossible any attempt at speeding. I see the papers speak of our trip as an experiment. It is nothing of the kind. We haven't the slightest doubt of our ability to make steam enough by burning coal oil to traverse the distance between the two cities.

"What we want to demonstrate is that we can do the trick quicker with our petroleum burners than it was ever done before. About ten days ago I took a run up to Trenton over the Bristol and Trenton Pikes—an extremely rough ride, by the way—and returned through Jersey via Mount Holly. The round trip was about 70 miles, according to the odometer. No attempt at fast time was made, but we did the distance under five hours, including stops."

The Outgrowth of Dissatisfaction

"What induced you and Mr. Mason to experiment with coal oil as fuel?" queried The Motor Age man.

"To begin at the beginning—as they say in the books—I was the first man in Philadelphia to own and run a steam wagon. It was a Stanley, burning gasolene. My experience with that machine led me to the conclusion that the statement that it is possible to obain gasolene anywhere—in any country or city store—is a rank absurdity. It is not so, as I have had reason to know on several occasions."

"On one trip down Jersey I ran out of

gasolene, and could find none anywhere within a reasonable distance, and had it not been for the courtesy of a gentleman who—fortunately for me—used a gasolene stove for cooking purposes, and had a supply on hand, I would probably have been compelled to hire a horse to pull the machine to the nearest railroad station. From that time Mr. Mason and I began to experiment with kerosene, which may be had at any grocery store in the country. The result of our work has been very satisfactory to us, and we think we have a good thing.

Has Other Advantages

"Some of the other advantages of kerosene over gasolene? Well, there is the almost utter impossibility of exploding the former under the ordinary conditions obtaining in automobiling. I accidentally opened a joint in the pipe during one of my trips, and despite the fact that there was a constant drip the oil did not ignite. I have found it quite safe at all times, and I have traveled over 1,000 miles with coal oil as a fuel. Then there is the question of economy. Take that Trenton trip as an instance. Two and a half gallons of coal oil carried me 70 miles. It would have necessitated about eight gallons of gasolene, to do the same distance. In this connection it is proper to bear in mind the resulting increase in traveling radius with the storage facilities unchanged. I am using a Locomobile, you know, and have retained the fuel tank that came with the machine. It's plenty large enough for my use."

"Another advantage which kerosene possesses over gasolene, is that with the former an air pressure of between 10 and 15 pounds gives an ideal mixture for fast work, whereas I have found at least 40 pounds of air to be necessary with gasolene. I made a trip to Atlantic City once with gasolene. I was out for speed, and got to the shore, about 60 miles, in two hours and seventeen minutes; but my companion put in all his time at the pump in an effort to keep up sufficient air pressure. Another advantage is that the auxiliary torch, which is necessary in starting a gasolene fire, is dispensed with entirely when using kerosene. Strike a match, apply it—and there you are! Another thing in favor of the kerosene flame is that it will not blow out as easily as does gasolene. I have had much trouble in that respect while using the latter for fuel, especially on windy days. And as to jarring the kerosene flame out, that is an impossibility."

Uses Four Burners

"We are not yet ready to give out the details of our device, although it is patented. Two specially designed retorts and fire-boxes are used and the result is a gas which might be tanked and used at any time. Four burners are provided, though for city use two are ample; two or four can be used if desired, the manipulation of the same being done from the seat by means of a lever. I predict that in another year, or possibly two, kerosene will be used almost entirely for automobile fuel in this and other countries where it may be had more readily than gasolene."

CONSTRUCTION OF A MOTOR VEHICLE

THE PRACTICAL CONSTRUCTION OF A MOTOR VEHICLE ADAPTED FOR USE IN CONNECTION WITH THE FOUR-HORSEPOWER GASOLENE MOTOR ALREADY DESCRIBED IN THE MOTOR AGE

BY L. ELLIOTT BROOKES

PART V.

The present chapter takes up the further description of the controlling mechanism, begun in the last chapter and completes it.

Fig. 42 shows two views of the bell crank lever which operates the brake upon the internal gear, and is consequently a part of the fast speed controlling mechanism. This lever should be made of a good quality of cast iron. A pattern is, of course, required. The jaw in the vertical arm of the lever should be cored so as to save machine work. It is not necessary to do any machine work on this jaw, except to file out the slot and drill and ream the hole to the sizes given in the drawing. The swivel is made from a piece of cold rolled or Bessemer steel, ⅞ of an inch square. It should be a nice working fit in the hole in the horizontal arm of the lever, having the shoulder part which goes in the hole a trifle long, so as not to bind the swivel.

Fig. 43 is the bell crank lever which operates the vehicle brake, through the medium of the brake wheel upon the end of hollow transmission shaft and the chains and sprocket wheels. The same instructions apply to this lever as to the one shown in Fig. 42. To machine these levers, all that is necessary is to hold in a lathe chuck by the free end of the hub, bore and ream out the hole, then place on a mandril and face off both ends of the hub and the faces of the bosses on the swivel arm to the sizes given.

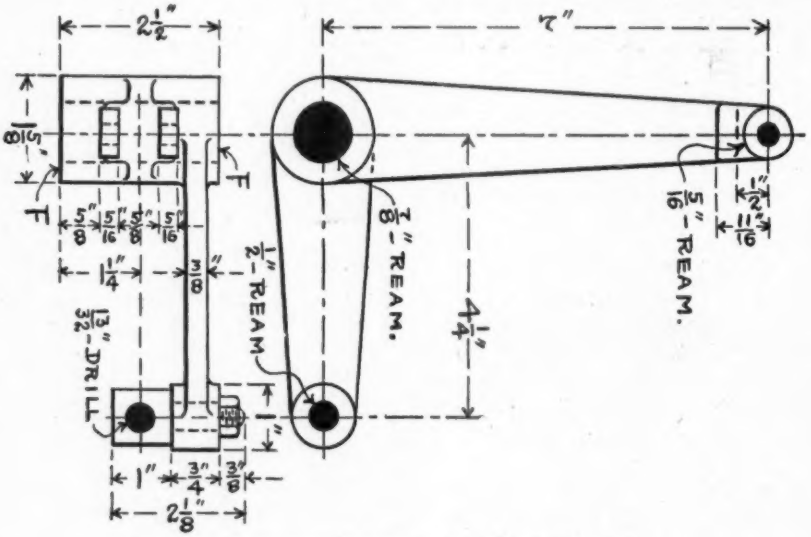


FIG. 42.—FAST SPEED BELL CRANK LEVER.
1—Cast Iron, with Steel Swivel.

The collars for holding these bell crank levers in position on the shaft, which is carried by the brackets shown in Fig. 41, are shown in Fig. 44. They should be made of steel and drilled and tapped for a 5-16-inch, square head, cup point set screw, for holding the collars on the shaft.

The shaft for carrying the levers shown in Figs. 42 and 43 is not detailed, as it is

simply a straight piece of cold rolled or drawn steel, ⅞ of an inch in diameter.

Fig. 45 shows the lever for operating the slow forward and back speeds,

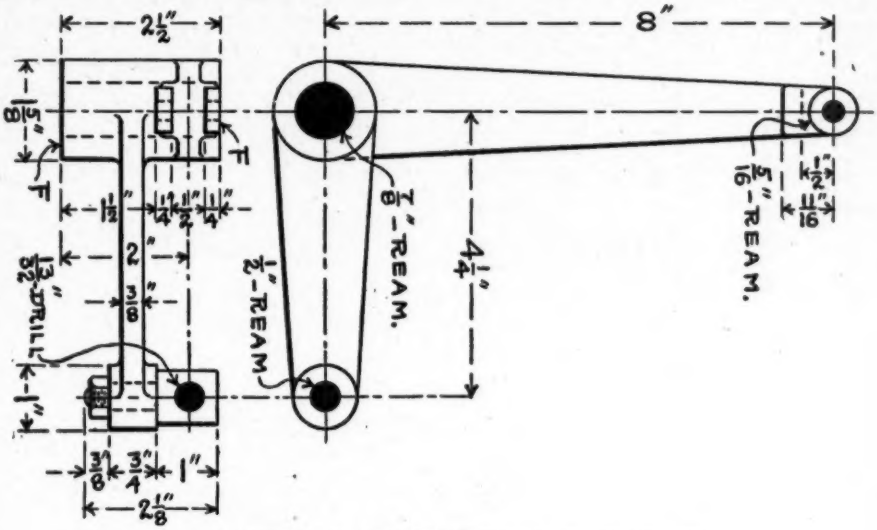


FIG. 43.—VEHICLE BRAKE BELL CRANK LEVER.
1—Cast Iron, with Steel Swivel.

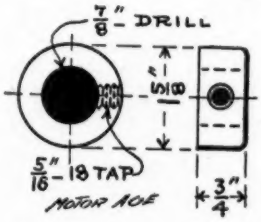


Fig. 44.—Bell Crank Lever Shaft Collar.
2—Steel.

through the medium of the cone clutch lever shown in Fig. 29. This lever should be of cast or semi-steel, with a taper pin, 5-16 of an inch at the smaller end, with taper of ¼ of an inch to 1 foot, and threaded on the end 5-16 of an inch, 18 thread, for 5-16-inch hexagon lock nut as shown. This pin should be made from Stub's steel. To insure an accurate job the hole in the hub of this lever should

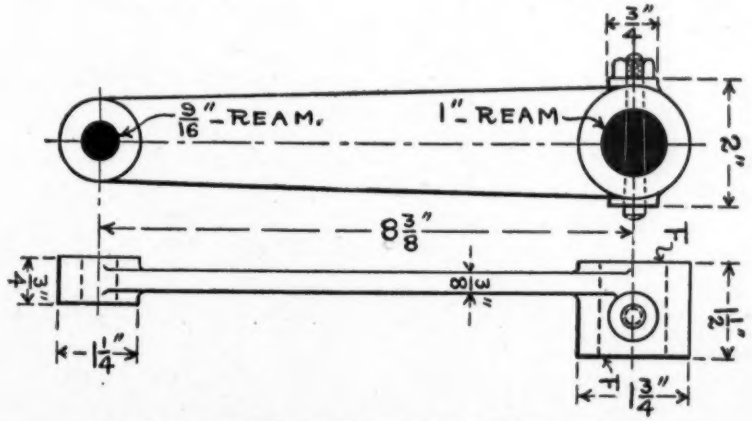


FIG. 45.—FORWARD AND BACK SPEED LEVER.
1—Cast or Semi-Steel.

It should be cut off long enough to stick out about 3-16 of an inch at each end.

be first drilled and reamed, and then the lever should be put on a mandril in a

lathe and the ends of the hub and the faces of the bosses on the other end of the lever finished to size.

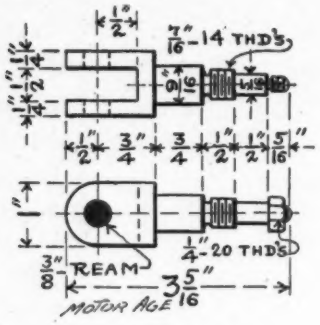


Fig. 46.—Swivel Jaw.
1—Steel.

Bessemer steel. The 5-16-inch extension shown at the right hand side in the drawing is to carry the rod which oper-

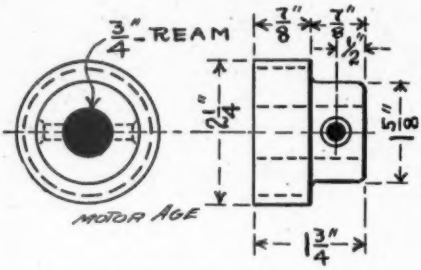


Fig. 49.—Vehicle Brake Pinion.
1—Steel.
2-inch Pitch Diameter.
16 Teeth—No. 8 Diametral Pitch.

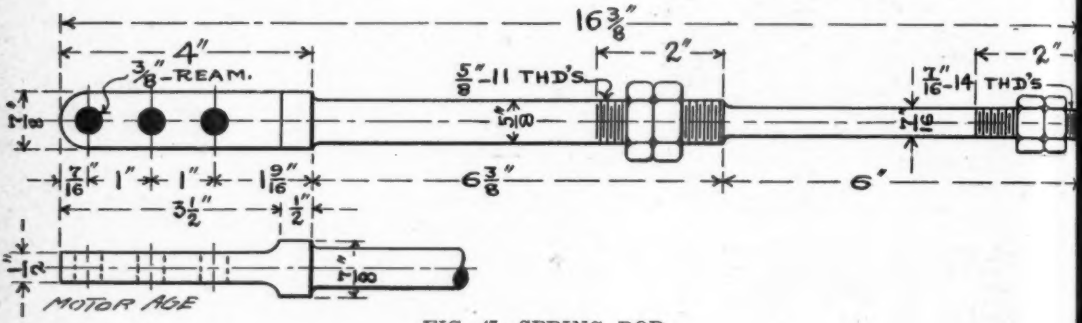


FIG. 47.—SPRING ROD.
1—Steel.

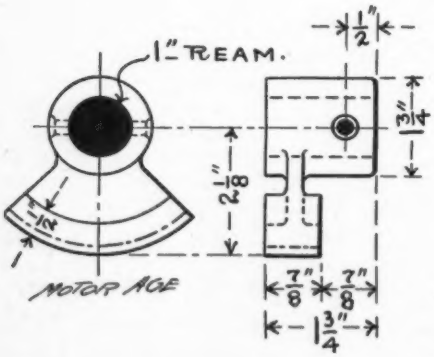


Fig. 48.—Vehicle Brake Quadrant.
1—Phosphor Bronze.
4-inch Pitch Diameter.
Cut 8 Teeth—No. 8 Diametral Pitch.

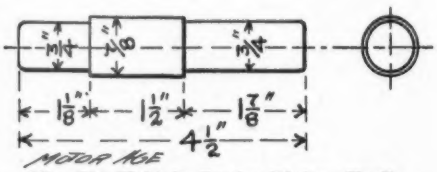


Fig. 50.—Vehicle Brake Pinion Shaft.
1—Steel.

Fig. 46 gives two views of the swivel jaw, which goes into the 9-16-inch hole in the end of the lever just described (Fig. 45). This should be made from a piece of 1-inch square, cold rolled or

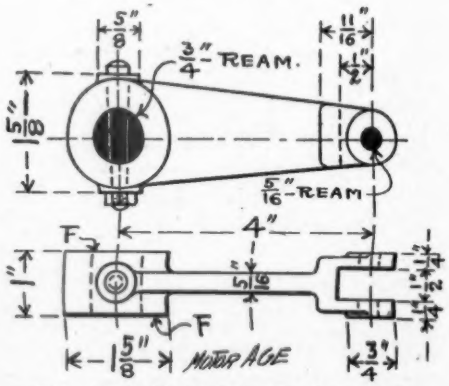


Fig. 51.—Vehicle Brake Rocker Arm.
1—Cast Iron or Semi-Steel.

ates the butterfly valve of the carburetter.

The spring rod which connects the forward and back speed lever (Fig. 45) to the cone clutch lever (Fig. 29) is shown in Fig. 47. This is made from ⅞-inch, square steel. It requires two springs, one with an 11-16-inch hole and the other with a ½-inch hole, not less than 2½ inches long, when light, made of spring wire of about No. 28 pioano wire gauge. Two ⅝-inch and two 7-16-inch, hexagon nuts are required for holding and also adjusting the tension of the springs, and should be finished and the corners chamfered on both faces as shown.

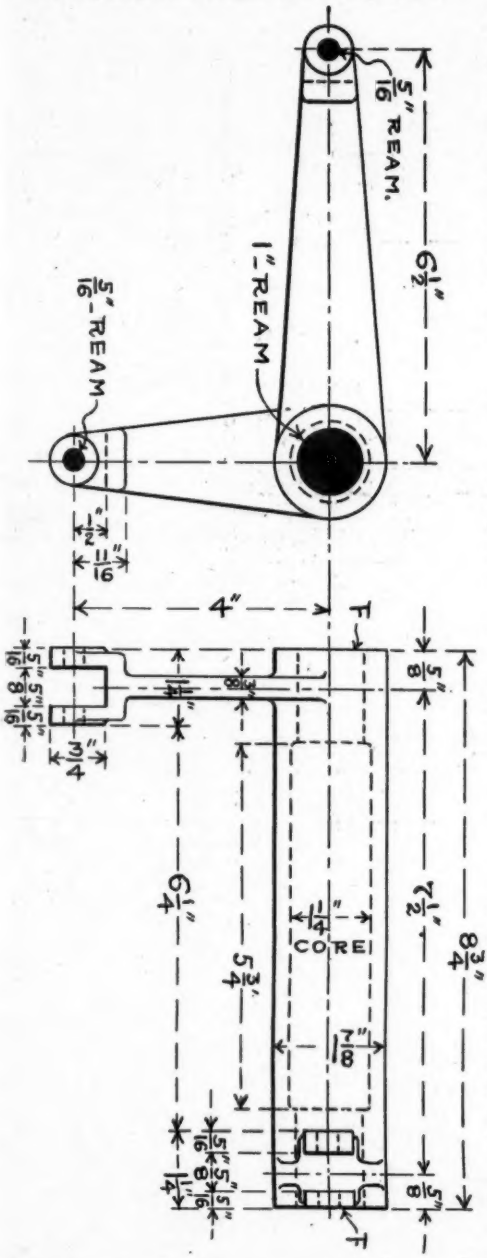


Fig. 52.—Fast Speed Foot Bell Crank Lever. 1—Cast or Semi-Steel.

Fig. 48 is the quadrant which operates the bell crank lever (Fig. 43) through the medium of a pinion rocker arm and connecting rod. This should be made from phosphor bronze. A pattern will, of course, be required.

The pinion which meshes with this quadrant (Fig. 48) is shown in Fig. 49. It may be made from a piece of bar steel or a forging as desired. Fig. 50 is the shaft which carries the pinion (Fig. 48) and the rocker arm (Fig. 51). This should be carefully made from a piece of Bessemer steel, large enough to turn down to the required dimensions.

Fig. 51 is the rocker arm, which actuates the bell crank lever (Fig. 43). It should be made of cast iron or semi-steel, and fitted with a taper pin similar to lever in Fig. 45, being ¼ of an inch at the small end of the taper, which should be ¼-inch to 1 foot as before, and have a ¼-inch, 20 thread, on the end for a ¼-inch, hexagon, lock nut as shown.

Fig. 52 shows the fast speed, foot, bell crank lever for operating the fast speed mechanism. This should be of cast or semi-steel, and the pattern cored out in the center portion, as shown, so as to give a bearing on the shaft at the ends only. To machine this part, hold in lathe chuck by one end of the hub and steady rest the other end just back of the arm. Rough out the hole at this end and slightly chamfer the edge of the hole to the taper of the lathe center, then reverse and hold the end just roughed out and chamfered in the hole, in chuck, using the lathe center as a guide, steady rest as before, and bore out this hole to size. Then reverse and finish the other end in the same manner. The lever can then be put on a mandril and the ends of the hubs finished to size. The jaws in the arms are simply filed out to the size

given in the drawing, and the holes drilled and reamed, as shown.

Fig. 53 shows the foot brake for actuating the fast speed mechanism. The pedal should be made of bronze, and the stem from a rod or forging of steel.

Fig. 54 shows the collars for locating and holding the shaft which is carried by the brackets shown in Figs. 39 and 40. They are of steel.

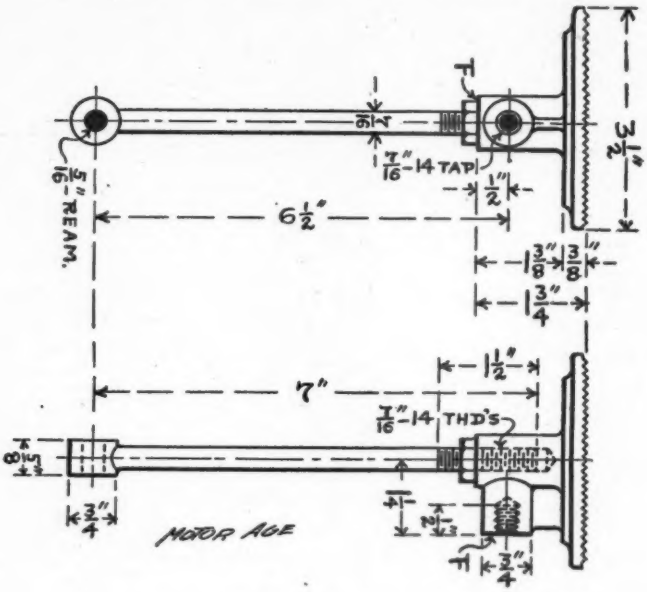


FIG. 53.—FAST SPEED FOOT LEVER.
1—Bronze Pedal and Steel Stem.

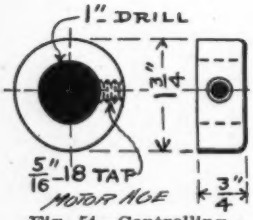


Fig. 54.—Controlling Lever Shaft Collar.
2—Steel.

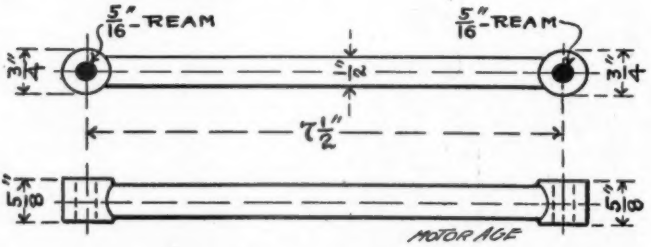


Fig. 56.—Fast Speed Connecting Rod.
1—Steel.

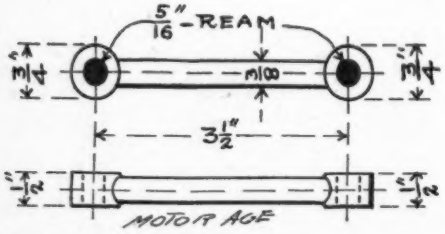


Fig. 55.—Vehicle Brake Connecting Rod.
1—Steel.

Fig. 55 is the connecting rod between the rocker arm (Fig. 51) and the bell crank lever (Fig. 43). This may be turned up out of ¾-inch, square, steel stock, or made from a forging if desired.

The connecting rod between the foot brake lever (Fig. 52) and the bell crank lever (Fig. 42) is shown in Fig. 56. This is of steel as before, and can be made in the same manner as detailed for Fig. 55.

Fig. 57 shows the brackets which carry the band brakes, for the fast speed and the vehicle brake. The upper one is for the fast speed brake and the lower one for the vehicle brake. The bracket proper

is of cast iron. Finish should be left on both sides of the foot, as one bracket is finished on one side and the other on the a washer are needed with each stud, as shown.

The band brakes are shown plainly in

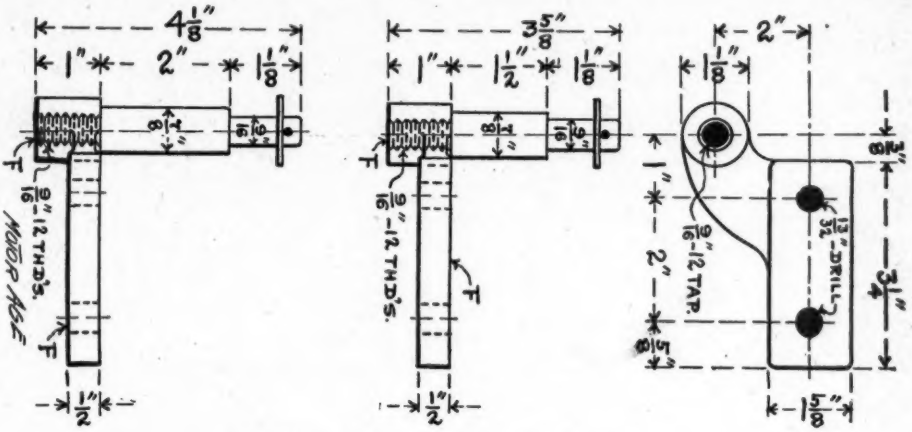


FIG. 57.—BAND BRAKE BRACKETS.
1 Each—Bracket Cast Iron; Stud Steel.

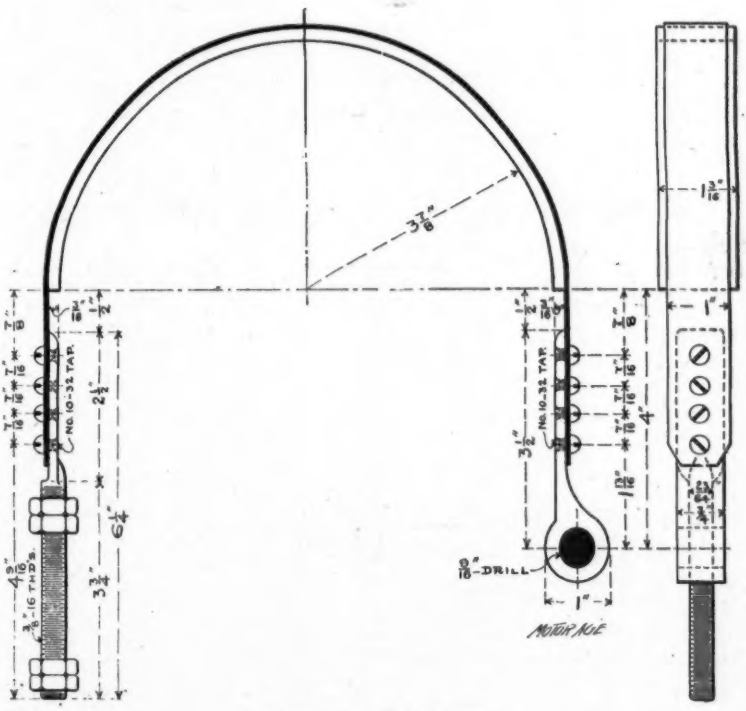


FIG. 58.—BRAKE BANDS.
2—Complete.

other, as shown, the only difference is in the length of the steel studs. A split pin about ⅛ of an inch in diameter and Fig. 58. The bands should be made from spring steel 1 inch wide and about 3-64 of an inch thick. The bands are

lined with leather, as shown, which should be double thickness and fastened to the steel bands with copper rivets to avoid cutting the faces of the brake wheels. The spring rod and the eye are of steel, and should be fastened to the

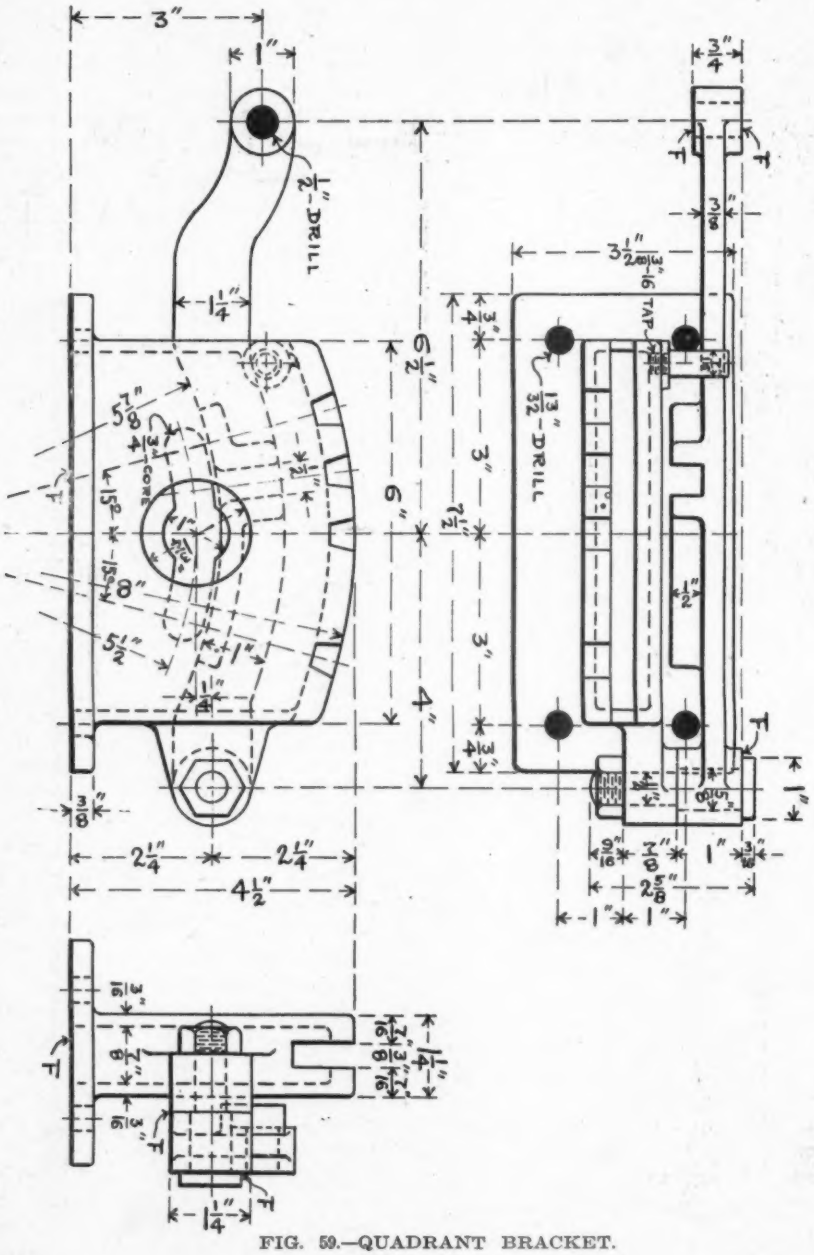


FIG. 59.—QUADRANT BRACKET.
1—Cast Iron.

about ⅛ of an inch in diameter, with countersunk heads. These heads should be let into the leather as far as possible spring steel brake band, as shown, by No. 10, 32 thread, button head screws, which must be riveted over, as shown.

Four ⅜-inch hexagon, lock nuts are required for each band brake. The spring rod should be turned down 1-64 of an inch below the proper size, which should be ⅜ of an inch, making it 23-64 of an inch, so as to prevent the swivels from catching on the threads. The thread must, however, be cut the same as if the spring rod was full size, so as to leave a flat top on the thread. A tap drill of the exact diameter must be used for a full thread. used for the nuts, so as to get a full thread in them.

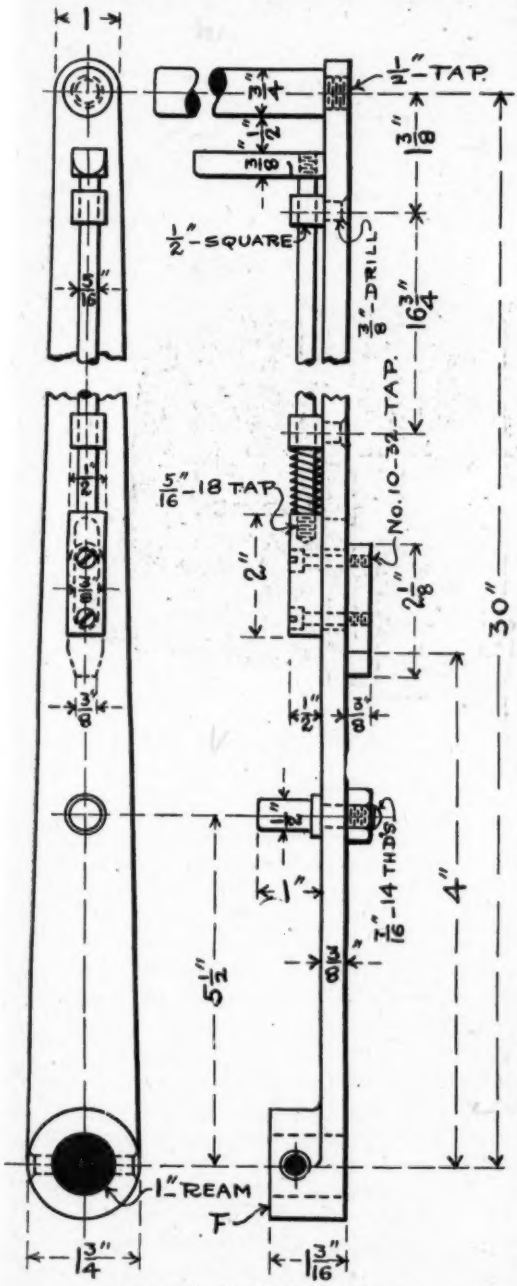


Fig. 60.—Controlling Lever.
1 Complete—Steel.

Fig. 59 shows the quadrant bracket for the controlling lever, and the locking lever for the fast speed foot lever. The bracket is of cast iron, while the lever should be made of cast or semi-steel, for which a pattern will be needed. The notches in the top should be left out of the bracket and put in after the mechanism is assembled, a small boss should be placed in the core box of this pattern for the hub for the stop pin shown at the left hand side of the side view of the bracket. The curved slot and hole shown, should also be cored out in the pattern. The stud for holding the locking lever in position is of steel and is fully dimensioned.

The controlling lever itself is shown in Fig. 60. This requires a steel forging, which should be very well made and be straight and smooth, as it should not be necessary to do any machine work on this lever except to bore the hole in the hub, face one side of it as shown, cut the slot for the dog in the arm of the lever, and drill or tap the small holes shown. The lever arm proper should be draw filed until it is smooth and practically straight, and, when the vehicle is finally assembled, it can be painted. The details of the construction of the controller are so plainly shown that no further description is thought necessary.

This chapter completes the description of all the controlling mechanism for the two forward speeds and the reverse, as well as that of the brake. The assembling and adjusting of this mechanism will be fully described in connection with the description of the assembling of the entire vehicle, which will be treated in the last chapter. The manner in which this mechanism operates was fully described in the first chapter. If any doubt as to the manner of operation remains, the reader should re-peruse that chapter.

ONE VARIABLE SPEED GEAR

The demand for acceptable change speed gears on gasolene motor vehicles is a constantly broadening one. Thus far the development of speed changing mechanisms has hardly kept pace with that demand. Several speed changing devices for general machine application

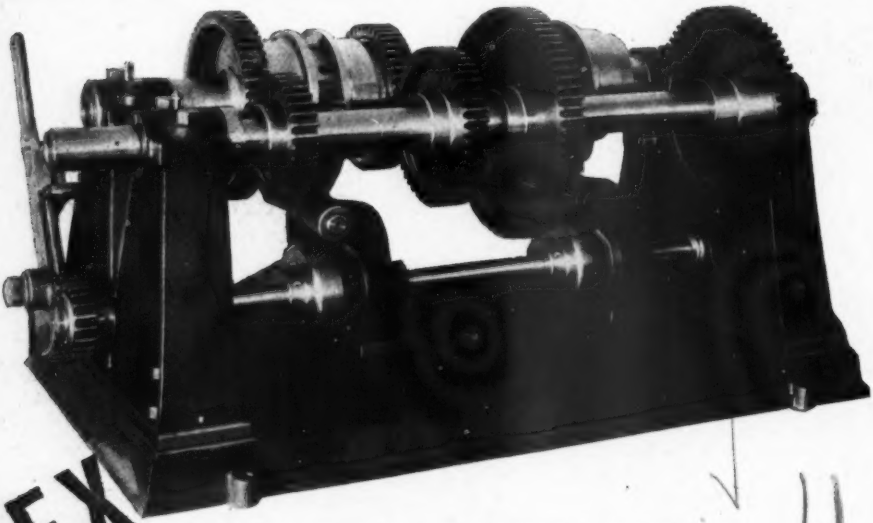


FIG. 1.—HELIX GEAR CO.'S TRANSMISSION MECHANISM.

have been brought out recently, and some of them have been described in The Motor Age. But, although they show considerable ingenuity and originality, their adaptation to the special application to automobile driving is still a matter of the future. Study of their respective operating principles and mechanical features is interesting and profitable as a source of education in the manufacture and use of variable speed gears.

The accompanying illustrations show one of these new speed changing devices which has recently come to notice. It is made by the Helix Gear Co. of Hartford, Conn., and was originally designed for use in connection with machine tools. The most notable portion of the device is the clutch employed to connect or disconnect the respective pairs of transmission gears. One of the important features of this clutch, which is of the friction variety, is that its action is not absolutely positive. The friction between the two clutch surfaces, it is said, can never reach the point where there would be danger of breakage of the driving gear wheel teeth. The value of this provision for avoiding shocks and breakage is especially apparent in automobiles, on account of the frequent cases when a high speed must suddenly be changed to a slow speed, or the reverse.

Referring to the illustrations, Fig. 1 shows a working model of the device. It has two pairs of clutches mounted on the motor shaft A (Fig. 2), each pair operating two loosely mounted spur gears, meshing respectively with four gears rigidly mounted on a countershaft, from which the vehicle or machine to be operated may be driven by any suitable connections. Interposed between one of the gears on the motor shaft and its corresponding gear on the countershaft is an idle pinion M, to give a reverse motion. Three forward speeds and one backward are thus obtained.

The clutches are operated by the two

double cams B, B, mounted on the shifting shaft C, which is rotated by means of a lever, segmental rack and a pinion, as shown in Fig. 1, or by a hand wheel N, a shaft and two bevel gears, as shown in Fig. 2. Mounted on rigid fulcrums above each pair of cams are two shifting levers D, D, each of which has a single arm actuated by the shifting cams and a forked arm, the two forks of which are provided with rollers which engage a groove in the shifting sleeves F, F. These shifting sleeves are parts of the friction clutches and are arranged to rotate with the shaft A and also to slide upon this shaft.

Each of the hubs (Fig. 3), which are loosely mounted on the shaft A, carries a spur gear and also has a flanged sleeve, which is enclosed or partially enclosed by the end of the shifting sleeve, F.

Within the flanged ends of each hub G, is a split ring H, mounted to rotate with the shaft A. The periphery of this ring is in close proximity to the internal periphery of its enclosing flange. Recessed between the closely adjacent ends of the split ring H, is a pair of levers, J, J. When the clutch is out of engagement the free ends of tthese levers J, J lie togetner. When the shifting sleeve F is moved to throw the clutch into engagement, a wedge K, carried by it, enters between the beveled extremities of the free ends of the levers J, J, forcing them apart, as shown in Fig. 3, and expanding the split ring H, which in turn binds against the flange of the hub G, and drives the gear carried by that hub.

It is, of course, obvious that when the clutch parts at one end of the entire clutch mechanism are brought into engagement, those at the other end are released. Also when the sleeve F is in central position both are released.

An adjusting screw provides for the wear of the split ring H, and the flange of the hub G.

It will be noted that the wedge K, which forces apart the expansion levers J, J, bears against the latter with parallel edges, as soon as it has been forced into full engagement, thus obviating variation in expansive force and reactive effect upon the shifting device.

Each of the shifting cams B, B, furnishes two central and two extreme positions for its shifting lever D, D, and hence three corresponding positions for the shifting sleeves F, F. The two sets of cams are so positioned on the shaft C, that their respective central positions will both leave the clutches out of engagement, and so that no two of the four extreme positions will be operative at the same time. If a hand wheel be used to govern the movement of the shifting shaft C, and the bevel pinion on the end of the shaft of this hand wheel have one-fourth as many teeth as the bevel gear wheel on the end of the shifting shaft C, then one complete revolution of the hand wheel will give to the shifting shaft but one-fourth of a revolution, or just enough to throw one clutch out of engagement and the next one into engagement. Assuming that one clutch is in engagement, half a turn of the hand

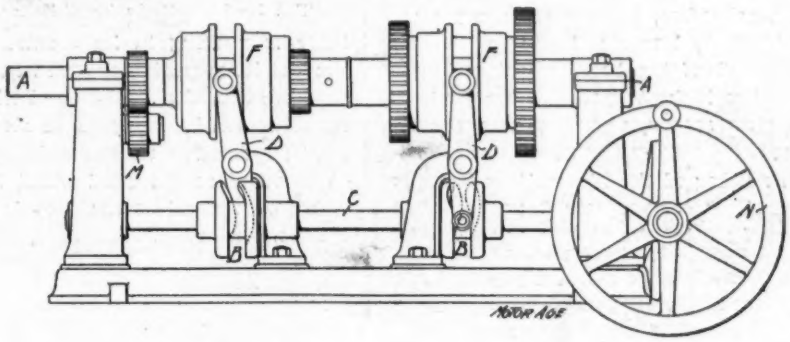


FIG. 2.—SIDE ELEVATION OF THE HELIX GEAR.

wheel will throw it out of engagement, and all the clutches will then be out.

Assuming that the transmission device be fitted to a motor vehicle and the motor be running with none of the clutches in engagement, a half turn of the hand wheel will throw the low speed clutch into engagement; a further half turn will throw this clutch out of engagement, and a still further half turn will throw into engagement the second speed clutch. Another complete revolution of the hand wheel will throw the third speed clutch into engagement. Still another complete revolution will throw the fast speed clutch out and the reverse clutch into engagement. This, it is stated, can be done without damage to the mechanism, although the more rational method would be to reverse the movement of the hand wheel and pass from the highest speed to the medium and slow speeds, and thence to the reverse.

In neither of the illustrations has any attempt at compactness been made, as the makers believe that compactness in different vehicles can best be accomplished in different ways, according to the design of the motor and other mechanism. On the same principle, the speed changing mechanism can be placed in any desired position in the vehicle, as

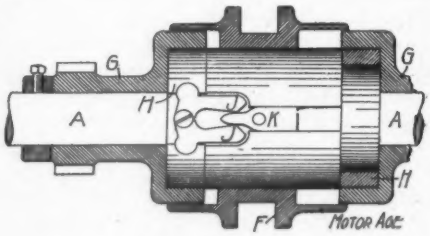


Fig. 3.—Clutch Mechanism of Helix Gear.

there is nothing in its construction to prevent its operating as well in one position as in another. The hand wheel and its shaft can be arranged in almost any position relative to the shifting shaft, so as to place the hand wheel in a position convenient to the operator of the vehicle.

ACETYLENE IN EXPLOSION ENGINES

The question of the employment of acetylene as a source of power for explosion engines is gradually attracting more and more attention. The problem has its fascination. One element in this is the ready production of acetylene when and as required for use by the simple process of applying water to calcium carbide. A second ground on which attention has naturally been attracted to the subject is the ready storability of acetylene when formed as a solution in acetone. Acetylene may also be stored like any other gas by simple compression.

There are, consequently, three general lines of proposals for its use in explosion engines for motor cars. The first of these involves the idea of generating the acetylene as required for use on the car by one of the many forms of apparatus which are at present in use for generating the gas for illuminating purposes, or, at any rate, of some slight modification of these. The problem, however, is not as simple as it seems. The matter appears to be simple and easy enough when one of these various devices supplying a few lights is observed in operation for a short time in a shop window. But when one comes to deal practically with the matter a good many difficulties and sources of trouble are found to be involved.

The automatic acetylene generators may be divided into two classes: those that feed the water on to the calcium carbide, and those that feed the calcium carbide into the water. In either case, of course, automatic means must be provided for cutting off either the supply of water or of carbide when a certain

pressure of gas in the receiver is attained.

The former method of feeding the water on to the calcium carbide is much the worse of the two. It is very difficult to adjust the flow of water accurately by any automatic pressure device. That is not the worst trouble. Wherever the water has come in contact with the calcium carbide a coating of lime is produced, and the result of a supply of water acting upon carbide which is already coated with lime is very different from its effect on clean, fresh carbide. It soaks into the lime and makes it wet, and the damp lime continues to act on the kernel of carbide left inside it, with the result that the generation of gas goes on for a considerable time after the feed of water has been cut off by the controlling device. The result is that with this class of apparatus it is exceedingly difficult to keep the pressure anything like constant in the receiver. As the gas will necessarily be admitted to the explosion cylinder from the receiver, the result of this variation of pressure will, of course, be to vary the amount of gas admitted for the charges, with the consequence that irregular action of the engine will ensue. This, of course, may be counteracted by the employment of pressure compensating devices between the receiver and the engine. But all this means extra complication, extra weight, and extra trouble. The carbureters of existing gasolene motors are surely quite delicate enough.

There is further trouble connected with this type of acetylene generator. When it commences to operate there is a very great tendency for too much water to be admitted, with the result that a most powerful evolution of heat takes place. The heat is not infrequently sufficient to decompose the acetylene produced into lighter hydrocarbons and tar, and the tar is liable to get into the pipes and valves and to choke them. It may not be that in this case acetylene is first formed and then decomposed. It may be that tar and lighter gases are the direct product of the action of water on calcium carbide at higher temperatures, but the result, as far as the motor car man is concerned, or, for that matter, any other user of this class of acetylene generator, is the same.

The class of generator in which the calcium carbide is dropped into the water are not quite so bad as the above class. But they are not much better. The carbide is supplied in lumps that are very seldom anything like equal in size. The consequence is that, however excellent the mechanical arrangement for feeding in the carbide, the amount fed in each time the feeding mechanism acts is bound to vary to a greater or less extent. We consequently get, as with the other class of apparatus, unequal pressure, with its ensuing consequences. The presence of water in excess of course keeps the apparatus comparatively cool, and consequently the trouble with tar and the corresponding production of lighter gases is not encountered, but, en revanche, we have a nice accumulation of lime at the bottom of the vessel.

The storage of acetylene under pressure for use in a motor is quite out of the question. It is obvious at a first glance that we should have all the difficulties which are involved in any attempts to employ, compressed gas for this purpose. There is the trouble and expense of compressing the gas in the first place, and the weight of the strong containing vessel in which it would have to be carried. These considerations have put ordinary coal gas out of court for motor car purposes, and they would be not less serious in the case of acetylene. But the principal fact which renders the use of acetylene in this way quite impracticable is that on compression, when a certain pressure is reached—and the degree of compression is very uncertain and variable—acetylene explodes violently.

The employment of acetone as a means of storing acetylene under pressure is also but little likely to be of any practical use to the development of the motor car industry. It is true that acetone dissolves many hundred times its volume of acetylene, but it does so only under pressure, and a pressure corresponding more or less to that which would be required to compress the same volume of gas into the same space if the acetone were not there. The acetone

appears to prevent the danger of explosion when the acetylene is compressed, but that is all it does do. We should get the same trouble as regards the weight involved and the expense and bother of compression, as in the case of any other compressed gas.

It is unfortunate that these difficulties stand in the way of the practical employment of acetylene as a source of power in explosion engines for motor car propulsion, for it has peculiarities which lead to the conclusion that it might, when the requirements of the problem are properly worked out, prove a very useful agent.

It was pointed out in a former article that when we consider the hydrocarbons as fuels, we encounter certain anomalies, and that we cannot predict the value of a hydrocarbon as a fuel from simply knowing its percentage composition. It was pointed out that acetylene was one of these anomalies, that it was a much better fuel than its chemical composition, as at present known, would lead us to expect. It is, in fact, a splendid fuel. The heat produced by the oxy-hydrogen flame is about 3,000 degrees. The temperature of the oxy-acetylene flame—that is, the flame produced by substituting acetylene for hydrogen in the oxy-hydrogen flame—is about 4,000 degrees. This shows that acetylene is, in all probability, a superior fuel to hydrogen. Experiments have been made in the employment of acetylene in gas engines by Reval and others, and they seem to bear out this conclusion. As we should expect, the explosions were very powerful and very sudden. With proportions of gas and air, and under otherwise such conditions as would have produced an initial pressure in the cylinder, when using ordinary coal gas, of about 400 pounds per square inch, the indicator showed a pressure generally of about 700 pounds. Sometimes the pressure was apparently even higher than this, for it blew the indicator piston and spring out altogether. The indicator diagrams that were taken showed a curve of excessive and most uneconomical steepness. The pressure rose to its maximum practically instantaneously, and the expanding out was very inefficient, the pressure sinking to a very low value at an early part of the stroke. A concomitant and resulting disadvantage was the enormous heating of the cylinder walls, so that a most unmanageable amount of water had to be pumped through the water jacket in order to keep the cylinder workably cool. This, of course, means that a large proportion of the energy which should have gone to propel the piston was exhausted unprofitably in heating the cylinder walls. The speed of the motor with which these experiments were made was about 600 revolutions per minute. We may conclude that acetylene is a fuel suited only for motors running at a very high speed. It would evidently be worth trying in some of the little De Dion motors.

A less pleasing feature of acetylene appears to be that its explosions, even when the amount of gas and air admitted to the cylinder are as carefully regulated as possible, are of very unequal power, so unequal as to seriously and prejudicially affect the running of the engine.

One characteristic which acetylene seems to possess is greatly in its favor. Effective explosions can be obtained over a much wider range of proportions of air and gas than is possible with gaseous hydrocarbons.

The present position of the acetylene question, as regards the propulsion of motor cars, is that of a problem which remains to be worked out. It is a powerful but unruly agent. If motors can be satisfactorily constructed to work at such a high rate of speed as will utilize the sudden powerful explosion acetylene produces efficiently, and if they can be satisfactorily employed for the propulsion of the larger types of cars; if improved and more compendious generators, free from the disadvantages of those with which we are at present acquainted, can be constructed; if the irregularity of the explosions produced by acetylene can be eliminated, and if the cost of calcium carbide in the future be adequately reduced, then the application of acetylene for motor cars may be successful.

There is yet another manner in which acetylene might be employed for motor vehicle propulsion, although indirectly,

which is perhaps worthy of cursory mention. It has been discovered that acetylene may be economically converted into a very pure form of alcohol. In a recent article the results of some experiments in the use of alcohol for explosion engines were discussed. It appeared that alcohol was not a very efficient fuel. The inefficiency may possibly have been due to the manner of its employment. If previously dehydrated, and used by direct injection into the cylinder, the results would probably have been better. The alcohol showed itself, at any rate, to be a manageable and convenient source of energy. The chief drawback is, probably, its cost. The process of manufacturing alcohol from acetylene—that is to say, from calcium carbide in the first instance—produces alcohol much more cheaply than hitherto. Acetylene gas is converted into ethylene by passing it through a solution of the double sulphate of chronium and ammonium kept at a temperature of 40 degrees C. The ethylene thus produced is passed into sulphuric acid, where it forms hydrogen-ethylsulphate, from which the alcohol can be obtained, in practically an anhydrous condition, by distillation. With calcium carbide at about $20 per ton, the cost of alcohol produced by this process is said to be about 8 cents per gallon.—The Automotor Journal.

A HARROWING EXPERIENCE

In Philadelphia the other day an automobilist whose vehicle had a leaky gasolene tank ran his machine on a Camden ferry boat, and on the trip across the river the vapor from the dripping oil in some manner became ignited, and had the boat not been close to the slip and the machine dragged off the boat, through the ferry-house and out into the street, something might have happened besides the damage to the "auto." That is Chapter One of a most harrowing tale. Chapter Two is a little more serious. Here it is:

On a recent Sunday rain descended in torrents up to midday. The afternoon, though cloudy, was dry overhead. Several impatient Quaker chaffeurs, who had doubtless watched the lowering sky with dejected mien during the long Sabbath morning, possibly uttering explosives meanwhile anent J. Pluvius' carrying's-on, hopefully rose as the downpour ceased, and hastily bolting their dinners, filled up the gasolene tanks of their automobiles and hurried ferryward, intent on an afternoon's ride over the hard roads outside of that gay Jersey metropolis yclept Camden.

Coasting down the steep grade to the river front, they dashed up to the ferry slip as of yore. An important looking individual in the livery of the Pennsylvania Railroad (which owns nearly all the ferry lines between Philadelphia and Camden), who was guarding the gate, raised a warning hand:

"Hold on, there," said he. "Where are you going?"

"To Camden," replied the spokesman of the bunch.

"What kind of fuel are you using?"

"Gasolene."

"I'm sorry, then, for you can't go to Camden to-day. It's against orders."

"What orders?"

"I was instructed this morning not to allow any gasolene-burning automobiles to pass these gates, and I guess I'll have to obey them."

"Oh, they mean machines driven by gasolene motors. Mine's a steam wagon. Of course it can't apply to us. All four of us have steam wagons. We're all right. We can go across, can't we?"

"How do you make your steam?"

"Why, we burn gasolene. Only a little bit, you know. Entirely different from a gasolene motor, you know—entirely different."

"I'm sorry, gentlemen; but gasolene is gasolene, and I must obey my orders."

"But what are we to do? We must get across to Camden somehow."

"I don't know. Perhaps if you empty your tanks, you can get more gasolene in Camden."

"Um-um! That's an idea. What do you say, fellows?"

"Let's try it." And they one and all emptied their precious fuel into Delaware avenue, and pushed the four "autos" on to the boat one after another.

Arriving on the other side, the quartet again put their shoulders to the wheel and, pushing their machines out into Federal Street, they sallied forth on a gasolene-hunting expedition.

It is possible to get gasolene in Camden on weekdays. But on Sundays it is much easier to acquire a jag in effete "Philly" than it is to get a spoonful of the auto's life fluid in Camden. The quartet didn't know this, but they took the chance—and lost.

Grocery-store side-doors by the dozen were besieged, but nobody seemed anxious to dabble in gasolene transactions when attired in his best bib and tucker, and so, after an hour's fruitless quest, a council of war was held and it was decided to beat a retreat.

Returning to the ferry, the four lifeless machines were again one by one pushed onto the boat, and their dejected owners sat mournfully discussing the ways and means of reaching home from the Quaker city end of the ferry. The Fates were once more against them. After hauling the machines into Delaware Avenue, three of the party vainly spent three-quarters of an hour searching in different directions for that "auto" eau de vie—gasolene—and then gave up the hunt in disgust.

Chapter Three borders on the ludicrous: The shades of night were now beginning to give premonitory signs of descending, and after waiting until it was quite dark one of the party hied him to the nearest livery stable, and, after a short dicker with the owner, hired horses and had the machines "hippomobiled" up to the "auto" station on Broad Street. Here their owners, who had reached the same point via the electromobile trolley cars on Market Street, saw to the replenishment of the tanks and wended their way home at a twenty-mile-an-hour clip in order to work off a little of the energy they had stored up—not in their machines—during that heart-breaking afternoon.

The four friends agreed to "keep mum" over the affair, but on arriving at the club they discovered that "there were others." Some had refused to unload their tanks, and motored around Philadelphia all the afternoon; others had had experiences similar to those of the quartette whose story is related above; still others had worked various schemes to outwit the ferry officials—one shrewd fellow had returned to the station and secured a large basket and an empty can. At the top of the steep descent to the ferry he emptied his tank into the can, and putting the latter into the basket, his companion carried it over to Camden, while he ran his machine down grade by gravity, repeating the operation on the return trip.

The ruling of the ferry officials was most sudden and local automobilists are exceeding wroth at them for not having issued a day or two in advance a warning of their intended action. The two local automobile clubs are talking of taking temporary steps to overcome the annoyance and delay of establishing supply stations at both the Philadelphia and Camden ferry slips, where tanks can be emptied and refilled in short order. Later they hope to bring about a permanent modification of the law—possibly compromising by an inspection of the machine before boarding the boat—or, better, the entire repeal of the law.

The ruling is a relic of an old federal law which was intended to prevent the carriage of explosive fluids in bulk on steam or sailing craft which carry passengers, and if interpreted literally will work great hardship to automobilists, not only here, but throughout the entire country.

In connection with this ruling of the Pennsylvania Railroad authorities, an

automobilist, who, however, signed only his initials, wrote to the Philadelphia Inquirer as follows:

"I, and I am sure all other automobilists, coincide entirely with the view expressed in the strong editorial in to-day's Inquirer, relative to the annoyance caused by the ferry company's prohibition of vehicles carrying gasolene. The danger from explosion aboard a ferry is slight compared to the frightful conflagration threatening the property owners along the river front when, under orders of the company's officials, perhaps three or four gallons of gasolene is allowed to run loose on the street, possibly to be ignited by some careless or mischievous person, sending a sea of flames through the gutters and sewers, a menace to the warehouses and shipping. Cannot there be a concerted action made by the automobile owners of this city to have this regulation at least altered? If each carriage immediately upon boarding the ferry stop its engine (if a gasolene carriage) and close all valves, giving no outlet whatsoever to the gasolene, they would remain closed until the carriage is ready to leave the ferry. This it seems to me would obviate all possibility of ignition and subsequent fire or explosion. A man could be placed at the ferries, such ones as the companies will agree to carry automobiles on, to see that such regulations be enforced, and a heavy penalty be exacted for its violation. This, it seems to me, would protect the ferry owners, passengers and the other traveling public, without practically cutting off from the automobilists the entire State of New Jersey, as the present regulation does. This inspector could be paid from the relatively higher ferryage that the company would exact."

WINTON RUMOR IS DENIED

Cleveland, October 29.—There has been a determined rumor in circulation during the past few days to the effect that the Winton Motor Carriage Co. had decided to drop the manufacture of gasolene vehicles, and that, in the near future, a steam machine would be introduced by that well known company. One report went so far as to say that since the Sheldon patent infringement suit was brought against the company, about three months ago, the Winton people have not turned out a single gasolene vehicle.

Rumor Without Foundation

This last report was known to be wholly untrue by your correspondent, but desiring to place the Winton company in the right light before the public, Vice-President Henderson of the concern was asked as to the foundation for the stories, some of which are said to have emanated from former Winton employes. Mr. Henderson stated that there was absolutely no truth in any story regarding a change of the plans or policy of the company. He denied that the company was even experimenting with a steam vehicle and stated that for the past three years Mr. Winton, who is the mechanical head of the concern, had given no attention to this type of vehicle.

Did Experiment with Steam

Some years ago he was of the opinion that the steam vehicle would be practical but after experiments he turned his attention to the internal combustion type of engine as being the most practical for vehicle propulsion, and he has never changed his opinion. Far from being closed down, the Winton factory is being run overtime six days in the week, a very decided indication as to the demand for the Winton, since Cleveland mechanics are paid time and a half for all overtime.

Increasing Capacity of Plant

Furthermore, Mr. Henderson stated that he had just closed contracts for heavy forging machinery and machine tools which will considerably increase the capacity of the plant. The business for fall deliveries continues strong and already people are placing orders for delivery early in the spring. Secretary Brown of the company stated that the Sheldon patent suit was still before the court. The defense of this suit which is being made by all the prominent gaso-

lene vehicle manufacturers acting in concert, and at the instigation of The Motor Age, is too well known to require further mention.

Akron Automobile Factory

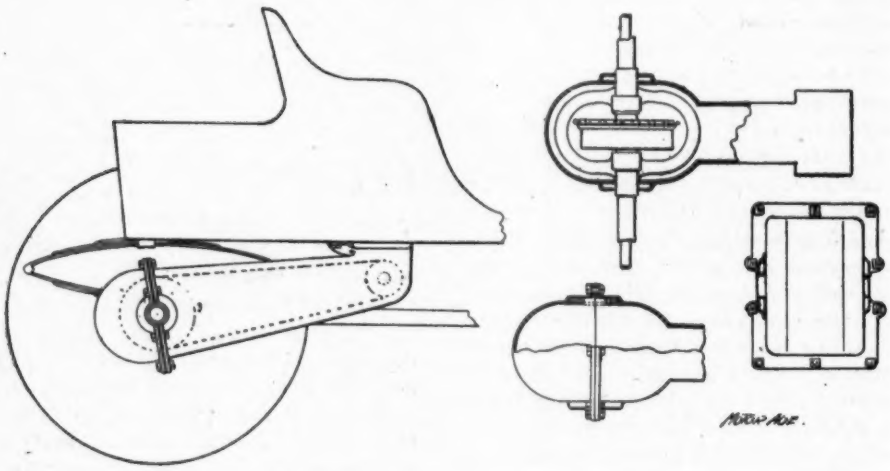
J. I. Warman of the National American Cycle Co. was in the city a few days ago on a deal which will probably result in the organization of a new company to operate the Akron plant in the production of automobiles and motors. The concern will probably be called the Akron Motor Co. and the gasolene type of machine will be produced. Mr. Warman will continue at the head of the company. The bicycle end of the business will be abandoned. The deal whereby the Akron plant was to have been removed to Indianapolis, mentioned in the last issue of this paper, has fallen through.

Eastman Company's Factory

The Eastman Automobile Co. has established a factory at 1120 Payne Avenue, where its vehicles and metal bodies are being turned out. The offices of the company will continue in the Superior Building for the present. The sheet metal body for steam vehicles, which has been described heretofore, is to be pushed to the front this winter and an interesting circular showing the construction and styles has recently been issued. The standard Eastman metal body will fit the Locomobile, the Mobile, the Milwaukee and the Eastman vehicles without change.

Lamkin's Gear Case

Frank Lamkin, Cleveland agent for the Mobile steam vehicle, received word from the patent office this week that his application for a patent on a vehicle gear case mentioned in a recent issue, had been granted. The patent went through the office in remarkably quick time, indicating that nothing like it had ever before been claimed by inventors. The device will undoubtedly prove a ready seller for use on all types of vehicles employing chain drive; since the advantages are too clearly appreciable to require enumerating, being much more pronounced than with a bicycle, since the exposed mechanism of the majority of vehicles is far more liable to injury from mud and dust than the ordinary bicycle chain.



LAMKIN'S GEAR CASE.

Description of Gear Case

The case is of sheet metal covering the motor, running gear and differential and constructed in sections so that the sides and rear portion may be removed for inspection of chain or differential. The case hangs from the body of the vehicle by button hole leather straps so

that it may be dropped for inspection of the motor. The patent is said to be a strong one, covering the use of hard rubber washers in half sections, allowing for up and down flexion of the vehicle body and rendering the case noiseless. The leather straps allow for a certain amount of side flexion.

ECHOES OF THE AUTO CLUB ELECTION

New York, Oct. 28.—The utmost friendliness marked the little contest over officers at the annual election of the Automobile Club of America. The victorious "young blood" has had its little crow and has settled down to lay plans for a vigorous administration.

Of course, the coming show is an all-engrossing feature of present energy. Its success from a trade standpoint being already assured so far as the occupation of all the available spaces by the best known makers can make it, the spectacular and social sides alone are left to be worked up for all they are worth. The enthusiasm of the "400" for the motor vehicle and the high social standing of the club membership as a whole would seem to leave little doubt of the show taking its rank as a recognised function of metropolitan fashionable life not far behind the horse show. Besides these attractions the interesting contests to be promoted on the track are very likely to arouse the interest of the general public. In this connection it has been decided to build a circular graded track on the roof, starting on the roof garden and ending at the second story of the tower. Here grade climbing contests and tests will take place. Altogether the show promises to be a great success from every standpoint.

Following show week will be a series of club runs. Notable among the possibilities in this direction will be a run of the New Yorkers to Boston and a visit of the Philadelphia Club to New York.

Racing Machines Coming

Several more high speed autos of foreign make—as many as twelve are mentioned—are said to be now en route to this country consigned to members of the club and it is whispered that the Long Island R. R. is to offer a cup for road races of the big flyers. The L. I. R. R. has a strong political pull on Long Island and could carry out such a project if any one could do it.

Banker Importing Autos

George Banker, the bicycle racer, who has been racing abroad for several years, arrived here from Paris yesterday. He says he will no longer be seen on the track, but will devote himself to the exploitation of the makes of motor tricycles and automobiles, whose agency for this country he has secured. He brings with him samples of each line.

Field's Fast Time

Cornelius J. Field at the Guttenberg races showed how fast he could run a motorette on the track. The other day he proved his daring during a fairly crowded hour of street traffic by making the run from the Battery to Astor Court, adjoining the Waldorf, in 17 minutes and 50 seconds.

FORTY MILES IN AN HOUR

Will forty miles ever be covered in one hour's ride?

This question which has agitated the cycling fraternity for many months, has at last been answered. There have been those who declard that it was practically impossible. Others said that it would—but not this year.

It remained for Will O. Stinson to demonstrate that the distance could be made. The plucky Cambridge rider had 330 yards to spare, when the hour was done.

This feat was occomplished on the Brockton, Mass., track, Thursday, October 25, at which place Stinson and his retinue had been camping for a week or more

on a record hunt. The conditions were fairly good for the trial, the success of which has attracted more attention in the cycling world than any track event of the past season.

Stinson's bicycle was an Orient Leader, and for pace he followed an Orient-Aster motor tandem, and it was to the remarkable way in which this pacing machine sped about the track that he was able to make the coveted distance. For the full hour it ran without a skip or break, keeping up an even speed, which was so necessary to the success of the undertaking. The new record was not only a triumph for Stinson, but it was an unqualified endorsement of the Orient Leader, and, above all, the Orient-Aster motor pacing machine.

Up to the moment Stinson has proven himself the best man in every mile up to 40, with the one exception of the mile, which was also secured on an Orient Leader by Harry Elkes.

NEWS OF THE MOTOR INDUSTRY

A FACTORY FOR THE MUNGER TIRE

New York, Oct. 28.—The Munger Vehicle Tire Co., which has hitherto been located at Hartford, where it has been having its experimental tires built, has taken a factory adjoining that of the New Brunswick Tire Co. at New Brunswick, N. J. The turning out of the improved tires invented by the well known L. D. Munger will be at once begun. Special attention will be devoted to the manufacture of heavy vehicle tires.

International Company's Headquarters

The International Motor Carriage Co. has opened headquarters in the Astor Court Building adjoining the Waldorf. Its gasolene stanhopes are elegant in design and finish and are trimmed in the best of leather with heavy phaeton top, fenders, gas lamps and bell. They are equipped with a five-horsepower two-cylinder balanced motor, have three forward speeds and reverse, a powerful brake and a foot lever for starting from the seat. Extreme ease and simplicity in operation, absolute safety, practical noiselessless, entire freedom from vibration and odor and perfection in mechanical construction are claimed for them. Their price is $1,200.

Two Good Accessories

Two radical improvements in motor vehicle accessions have been shown this week to a few interested parties. One is an acetylene gas lamp invented by F. E. Baldwin and to be marketed by A. H. Funke; and a very choice electric bell evolved from the fertile brain of Mr. Day of the Automobile Patents Exploitation Co. The lamp throws a marvelous beam of light. The bell is a most ingenious contrivance and can be attached to the accumulator of an electric vehicle, the sparking battery of a gasolene carriage or can be run by dry batteries for steam vehicle use. Both are likely to cut a broad swath in their respective lines.

A. B. C. to Open a Big Depot

It is said that the American Bicycle Co. will shortly begin the erection of an enormous automobile depot on the corner of Seventy-sixth Street and the Boulevard opposite the Locomobile headquarters. That some such step is in contemplation is not denied at the A. B. C. offices. By the way, the Waverley factory of the A. B. C. is to bring out a piano box electric runabout, which will weigh but 900 pounds and will sell at $750.

Interest in Kaiser's Offer

Kaiser Wilhelm's offer of $10,000 in prizes for an automobile race or rather test next June from Paris to Berlin, 719 miles, is causing no little comment in trade circles. The fact that it will be more of a test than a race, the factors of speed, price, endurance and fuel consumption being considered, appeals to the consideration of American makers; for the contest will be open to the world and

to the victor will probably go adoption of its vehicle by the German government for war purposes. The practicability of the automobile as proved in the recent German war maneuvers appealed strongly to Emperor William and induced this most generous offer.

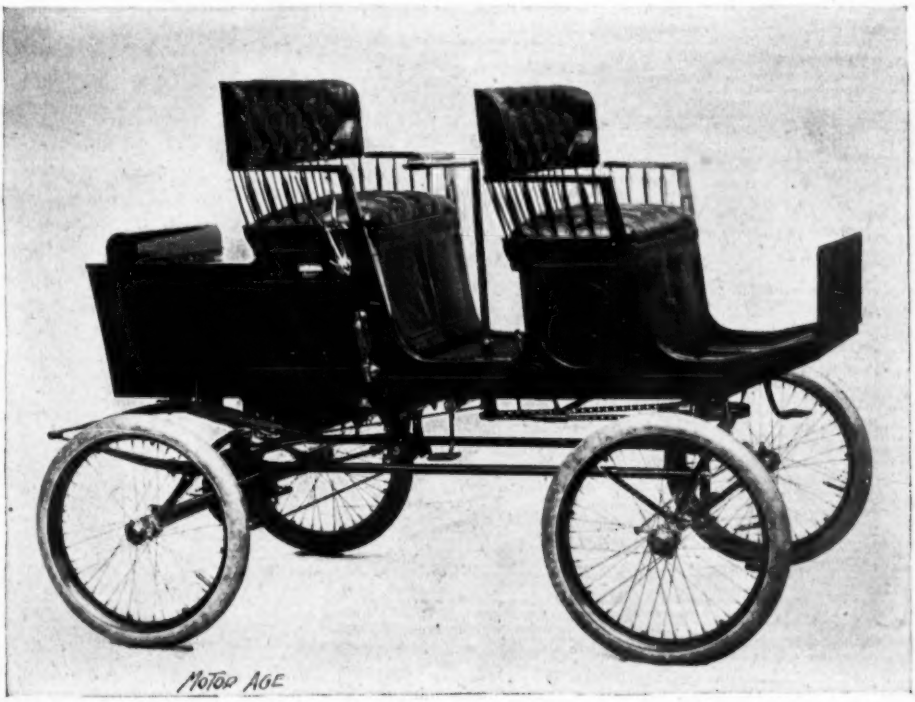
GOODYEAR TIRE CATALOGUE

The Goodyear Tire & Rubber Co., of Akron, Ohio, has issued a new and an attractive catalogue of their vehicle tires. It is most cleverly designed and is printed in two colors, with a still more elaborate cover. Pneumatic tires for motor vehicles are shown, ranging in size from 28x2½ up to 36x5 inches. "Our goods are not the cheap kind," says the catalogue, but "are made with a knowledge of the requirements."

In addition to pneumatic tires, the catalogue shows the well known Wing tire, a solid tire with wings which press against the sides of the channel rims to prevent dirt creeping in and getting into the bed of the channel and wearing out the tire. This tire is bound to prove popular among those who incline to solid tires.

MILWAUKEE AUTOMOBILE CO.'S SURREY

The accompanying illustration shows the steam surrey that has recently been put on the market by the Milwaukee Automobile Co. of Milwaukee, Wis. An inspection of the illustration will reveal the fact that the vehicle is built on the same general principles as the runabout which has been previously illustrated in the columns of The Motor Age. A novel feature is that the operator occupies the rear seat of the vehicles where the steering lever and controlling mechanism is located.



MILWAUKEE AUTOMOBILE CO.'S SURREY.

A small storage battery has been placed in the vehicle from which the current is obtained for electric lights adjacent to the steam gauge and to the water column. By pressing a button, the current is turned into these lamps, permitting the

operator to see the amount of steam pressure and the supply of water in the boiler, at night as well as in the daytime. The price of the surrey is $900.

NEW YORK STEAM OMNIBUSES

Herewith we present a cut of a public passenger omnibus, made by the New York Motor Vehicle Co., which will be exhibited in the restaurant section of the automobile show, at Madison Square Garden. It is evident that the designers have intended to make this a vehicle that will withstand hard usage, and lines of beauty have given way entirely to lines of strength.

NEW YORK MOTOR VEHICLE CO.'S OMNIBUS.

The omnibus has an engine, boiler, fuel and automatic regulation different from what is generally adopted by other manufacturers. The engine has compound expansion and the cylinders slide in keyways in a frame, and when steam is admitted the cylinder is forced in one direction and the piston in another, both being connected with the engine shaft, and by this double motion time is saved for the piston stroke and vibration is avoided besides. The construction is by Thomas F. Flinn, the company's general manager, and is said to produce a silent, powerful engine by which a shaft speed of 3,000 revolutions can be comfortably reached.

An opportunity will shortly be given press representatives to examine the engine and observe how it works in practice in the omnibus to be exhibited at the show. Anticipating first-hand information somewhat for the benefit of The Motor Age readers, it may be mentioned that the engine is rated at 20-horsepower and is fed from the Thornbrook boiler, called the Climax Safety. This is an English water tube boiler somewhat similar to the Thorneycraft "Lifu" and the pattern used for United States torpedo boats and in the steam vehicles originally designed by Marsh Bros. of Brockton, Mass., for the Atlantic Automobile Co. of Boston. But the Climax Safety is said to steam more readily than any other

type. The company points to Thomas A. Edison's verdict in regard to it. That "it is practically and theoretically the best boiler so far invented."

Kerosene is used as fuel—and that

New York Motor Vehicle Co.'s Water Tube Boiler.

alone would make the vehicle interesting—and a pilot light permits the fire in the burner to be put out entirely and relighted instantaneously when required.

The company is engaged in the manufacture of steam vehicles of every description, and within the next few weeks will have in their show rooms, samples of a runabout, stanhope, demi-mail phaeton, a ladies' runabout, and other styles; but as they started their business with a large order for omnibuses, and are organized for this class of business, they will make a specialty of heavier vehicles, trucks, delivery wagons, etc.

The company also have a patent automatic feed to their boiler, that is said to keep the water level within a quarter of an inch of any point determined on. It operates without floats, valves or expansion devices, it is extremely simple and impossible to get out of order. It is needless to say that, if this is true, it will relieve the chauffeur of his most serious cause of worry, and enable him to give his attention to the driving of his vehicle.

BUNDY AUTOMOBILE LAMPS

The Frank E. Bundy Lamp and Sundry Co., of Elmira, N. Y., doubtless markets more distinct patterns of acetyline gas lamps than any other firm in the world, and the large assortment of Bundy lamps for different purposes includes three headlights which are especially applicable to automobiles. These three gas lamps are shown in the illustration herewith.

That marked A is the regular automobile headlight, especially designed for the purpose. It has a silver plated parabolic reflector which is said to be more than commonly powerful, and a bevel edge plate glass front with ruby jewels on both sides. The finish of the lamp is japan with silver mountings. It is made to attach to the dash with a spring clip or finger iron. The extreme height is

Three Styles of Bundy Lamps.

13½ inches, and the front glass is 6 inches across. The lamp shown at B is called the "Runabout" pattern and is a smaller lamp suitable for general motor-vehicle and carriage use. It is finished in black japan with silver trimmings, has

powerful "bull-eyes" in front, polished bevel endge plate glass side lights, danger signal in the rear and is fitted with finger irons. The lamp at C is named the Bundy "Mail" lamp and is larger and more elaborately finished than the "Runabout" pattern, being especially designed for horse-drawn or auto equippages of the coach order. It has bevel plate glass swell front with plate side lights and ruby jewel rear danger signal.

In all of these lamps the same system of acetylene gas generation which has been used with great success for several seasons in the Bundy bicycle lamp is employed. One of the particular features of this system is that on account of the water tank being above the carbide cup, and between it and the combustion chamber, the gas is cooled on its way to the burner by passing through a tight tube surrounded by water and is thus dry and clean when it reaches the flame.

AN AUSTRALIAN DESIRES TO BUY

The Motor Age has received from a reliable Australian house a letter requesting catalogues and prices from manufacturers of motor cycles and gasolene vehicles.

Continuing, the letter says: "We wrote our New York agents, asking them to pay you our yearly subscription, but have received no copies. Please forward all the issues from the commencement, and under no circumstances must you cease to send us both the Cycle Age and the Motor Age until you hear from us. We congratulate you on the splendid value you give us in your publications."

A similar request comes from one of the big houses in British India.

NEW CHICAGO AGENCY

Ralph Temple, well known to the bicycle trade as one of the most successful jobbers and agents in the trade, and as one who has been uniformly successful in the conduct of his business, has closed out his bicycle supplies, rented a store of ample dimensions in the heart of Chicago's "automobile row" and secured the agency for vehicles of different types, as well as a large line of parts and accessories. The new store will be opened to the public in the near future, when, it is safe to say, vehicles will be sold at his store, if any be sold in Chicago.

KEYSTONE COMPANY ABSORBED

The business of the Keystone Motor Co. will in the future be carried on by the Searchmont Motor Co. of Philadelphia. The Searchmont company is incorporated for $1,500,000. The officers of the new company are Charles H. Graham, president; Theodore C. Search, chairman; H. G. Michener, treasurer, and E. B. Gallagher, vice-president and general manager.

BRIEF NEWS OF THE INDUSTRY

C. E. Corrigan has resigned as vice-president and general manager of the American Electric Vehicle Co.

The American Bicycle Co. will exhibit samples of the product of its four factories at the show—thirteen vehicles in all.

The Cleveland Machine Screw Co. write that they were awarded a gold medal, instead of a silver one, at the Paris Exposition, as was generally reported by the press of this country.

The Locomobile Co. of America is to open another salesroom and storage station in the heart of the fashionable district on West Forty-third Street near Fifth Avenue, New York City.

J. W. Bowman, vice-president and manager of the Frank E. Bundy Lamp & Sundry Co. of Elmira, N. Y., was a recent visitor to Chicago. His company is making a determined effort to secure a large share of the automobile lamp trade.

The American Steel & Wire Co. and the Republic Iron & Steel Co., two mammoth corporations, both have their eyes on the automobile business and are making preparations to furnish the various structural iron used in the construction of motor vehicles.

Owen H. Fay, the head of the Porter Storage Battery Co. of Chicago, is authority for the statement that within a short time the company will be reorganized, with ample capital, to manufacture not only storage batteries for the trade, but complete electric vehicles as

well. The Porter battery has been thoroughly tested in automobile service, over a long period of time, and, according to Mr. Porter, has shown itself capable of an output immensely in excess of any on the market, weight for weight.

MISCELLANEOUS

Advertisements under this head 5 cents per word, cash with order. Express orders, post office orders, or postage stamps accepted.

FOR SALE

FOR SALE—The Automobile Storage and Repair Co., 57 West 66th St., New York, have new and second-hand steam, gasolene, and electric carriages constantly on hand and have always some special bargains.

FOR SALE—Second-hand DeDion quadricycle in first-class order, on account of party ordering motorette. Address DEDION-BOUTON MOTORETTE CO., Brooklyn, N. Y.

FOR SALE—Winner Automobile for $325. Run about 600 miles. Address C. B., No. 1 So. Washington St., Tiffin, Ohio.

FOR SALE—Locomobile; good running order; can be seen and tried in Erie; $425.00 takes it. C LEJEAL, Erie, Pa.

FOR SALE—Valuable Patent; rear wheel eccentric adjustment device; adjustment easier and more accurate and cost of manufacture less than present methods. Address ECCENTRIC, care Motor Age, 150 Nassau St., New York. 1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FOR DETAILS ADDRESS
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